brother®

FACSIMILE EQUIPMENT
SERVICE MANUAL

MODEL: FAX1170/1270/1570MC
FAX1010/1020/1030
MFC1770/1870MC/1970MC

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Specifications are subject to change without notice.

PREFACE

This publication is a Service Manual covering the specifications, construction, theory of operation, and maintenance of the Brother facsimile equipment. It includes information required for field troubleshooting and repair—disassembly, reassembly, and adjustment—so that service personnel will be able to understand equipment function, to rapidly repair the equipment and order any necessary spare parts.

To perform appropriate maintenance so that the facsimile equipment is always in best condition for the customer, the service personnel must adequately understand and apply this manual.

This manual is made up of six chapters and appendices.

CHAPTER I.	**GENERAL DESCRIPTION**
CHAPTER II.	**INSTALLATION**
CHAPTER III.	**THEORY OF OPERATION**
CHAPTER IV.	**DISASSEMBLY/REASSEMBLY AND LUBRICATION**
CHAPTER V.	**MAINTENANCE MODE**
CHAPTER VI.	**ERROR INDICATION AND TROUBLESHOOTING**
APPENDICES	**Circuit Diagrams**

This manual describes the model and its versions to be destined for major countries. The specifications and functions are subject to change depending upon each destination.

CHAPTER I.

GENERAL DESCRIPTION

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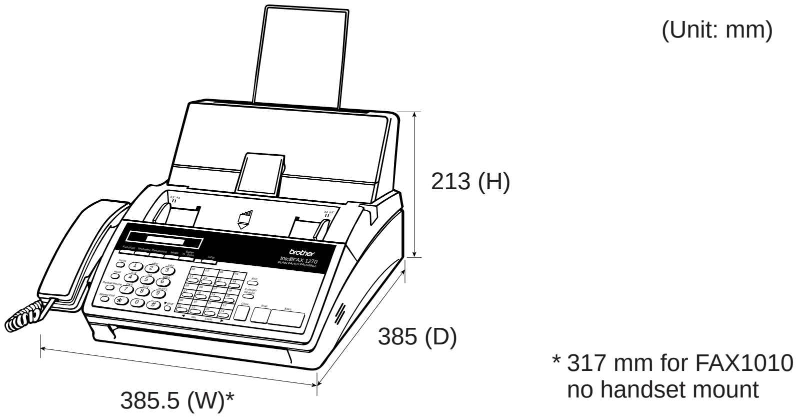
1. EQUIPMENT OUTLINE

1.1 External Appearance and Weight

The figure below shows the equipment appearance and approximate dimensions.

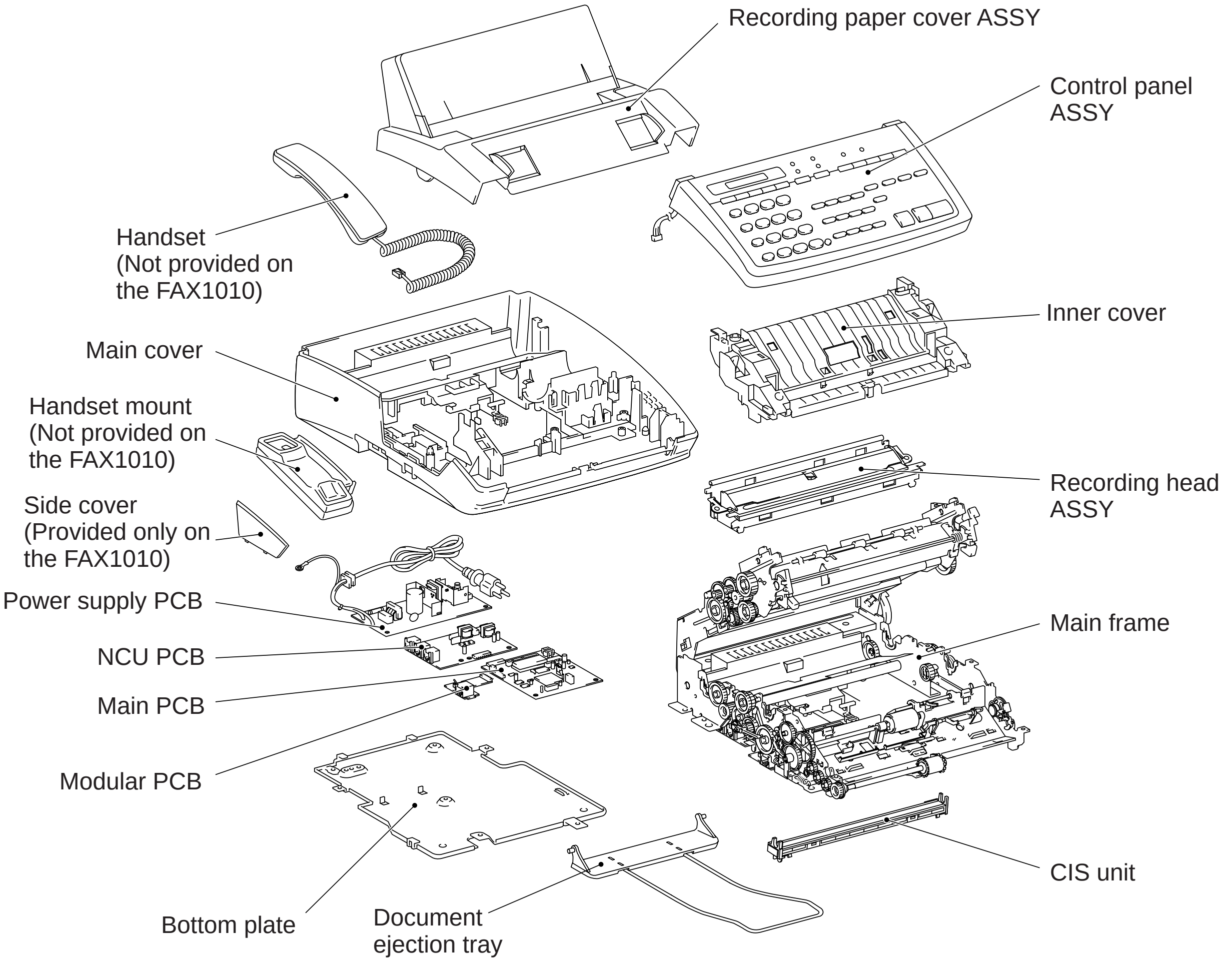

(Unit: mm)
213 (H)
385 (D)
385.5 (W)*

* 317 mm for FAX1010 which has no handset mount

Weight:	Machine proper	FAX1010:	Approx. 5.0 kg (excluding a ribbon cartridge)
		Other models:	Approx. 5.2 kg (excluding a ribbon cartridge)
	In package	FAX1010:	Approx. 8.7 kg
		Other models:	Approx. 8.9 kg

1.2 Components

The equipment consists of the following major components:


Recording paper cover ASSY
Control panel ASSY
Handset (Not provided on the FAX1010)
Inner cover
Main cover
Handset mount (Not provided on the FAX1010)
Recording head ASSY
Side cover (Provided only on the FAX1010)
Power supply PCB
Main frame
NCU PCB
Main PCB
Modular PCB
CIS unit
Bottom plate
Document ejection tray

2. SPECIFICATIONS

Model	FAX1170	FAX1270	FAX1570MC
Color	Gray (1395)	White (1397)	White (1397)
Modem Speed	9600 bps	9600 bps	14400 bps
CCITT Group	G3	G3	G3
Coding Method	MH	MH	MH
Transmission Speed	15 sec.	15 sec.	9 sec.
Input/Output Width	8.5"/8.5"	8.5"/8.5"	8.5"/8.5"
ADF Capacity (pages)	20	20	20
Recording Paper Loadable	200 sheets	200 sheets	200 sheets
Paper Size	Letter/Legal/A4	Letter/Legal/A4	Letter/Legal/A4
Ribbon Life (Letter-size print)	450 pages	450 pages	450 pages
Handset	Yes	Yes	Yes
LCD Size	16 x 1	16 x 1	16 x 1
On-screen Programming	Yes	Yes	Yes
Gray Scale	64 by Dithered	64 by Dithered	64 by E/D
Smoothing	Yes	Yes	Yes
One-touch Dial	12 x 2	12 x 2	12 x 2
Speed Dial	26	36	100
Telephone Index	Yes	Yes	Yes
Multi-resolution Transmission	Yes	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Distinctive Ringing	Yes	Yes	Yes
Next Fax-reservation	Yes	Yes	Yes
Help	Yes	Yes	Yes
TAD Interface	Yes	Yes	Yes
Coverpage	Yes, Super	Yes, Super	Yes, Super
Polling Type	Sim/Del/Seq	Sim/Del/Seq	Sim/Del/Seq
Receive Password (password plus)	Yes	Yes	Yes
Delayed Transmission	3, timers	3, timers	3, timers
Call Reservation	Yes	Yes	Yes
Call-back Message	Yes	Yes	Yes
Speaker Phone	Monitor	Monitor	Yes, Full-duplex
Activity Report	Yes	Yes	Yes
Transmission Verification Report	Yes	Yes	Yes
Page Memory	512 KB (20 pages)	512 KB (20 pages)	1 MB (50 pages)
Out-of-paper Reception	Yes	Yes	Yes
Quick Scan	Yes	Yes	Yes
Super Quick Scan	No	No	No
Broadcasting	Yes	Yes	Yes
ECM	Yes	Yes	Yes
Multi-transmission	Yes	Yes	Yes
Multi-copying w/Sorting	Yes	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)	Yes (50-150%)
TAD Type	No	No	DSP
OGM	No	No	Yes
ICM Recording Time	No	No	Yes, 30 min.
FAX Forwarding/Paging	No	Yes	Yes
FAX Retrieval	No	Yes	Yes
PCI (Missing link)	Ready	Ready	Ready
Message Center	No	No	Yes
Caller ID	Yes	Yes	Yes
Fax-/Voice-on-demand	No	No	Voice-on-demand
Mail Box	No	No	Yes
Remote Control	Yes	Yes	Yes
Toll Saver	No	No	Yes
Memo/2-Way Recording	No	No	Yes
Auto Reduction	Yes	Yes	Yes
Confidential Mailbox	No	No	No
Optional Memory	No	No	No

Model	FAX1010	FAX1020	FAX1030
Color	White (1138)	White (1138)	White (1138)
Modem Speed	9600 bps	9600 bps	14400 bps
CCITT Group	G3	G3	G3
Coding Method	MH	MH	MH
Transmission Speed	15 sec.	15 sec.	10 sec.
Input/Output Width	A4/A4	A4/A4	A4/A4
ADF Capacity (pages)	20	20	20
Recording Paper Loadable	200 sheets	200 sheets	200 sheets
Paper Size	Letter/Legal/A4	Letter/Legal/A4	Letter/Legal/A4
Ribbon Life (A4-size print)	420 pages	420 pages	420 pages
Handset	No	Yes	Yes
LCD Size	16 x 1	16 x 1	16 x 1
On-screen Programming	Yes	Yes	Yes
Gray Scale	64 by Dithered	64 by Dithered	64 by E/D
Smoothing	Yes	Yes	Yes
One-touch Dial	12 x 2	12 x 2	12 x 2
Speed Dial	36	36	100
Telephone Index	Yes (Not Super)	Yes (Not Super)	Yes (Not Super)
Multi-resolution Transmission	Yes	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Distinctive Ringing	Yes	Yes	Yes
Next Fax-reservation	Yes	Yes	Yes
Help	Yes, Simple	Yes, Simple	Yes, Simple
TAD Interface	Yes	Yes	Yes
Coverpage	Yes, Super	Yes, Super	Yes, Super
Polling Type	Std/Sec/Del/Seq	Std/Sec/Del/Seq	Std/Sec/Del/Seq
Receive Password (password plus)	Yes	Yes	Yes
Delayed Transmission	3, timers	3, timers	3, timers
Call Reservation	Yes	Yes	Yes
Call-back Message	Yes	Yes	Yes
Speaker Phone	Monitor	Monitor	Yes, Full-duplex
Activity Report	Yes	Yes	Yes
Transmission Verification Report	Yes	Yes	Yes
Page Memory	512 KB (20 pages)	512 KB (20 pages)	1 MB (50 pages)
Out-of-paper Reception	Yes (20 pages)	Yes (20 pages)	Yes (50 pages)
Quick Scan	Yes (18 pages)	Yes (18 pages)	Yes (18 pages)
Super Quick Scan	No	No	No
Broadcasting	Yes, 60 locations	Yes, 60 locations	Yes, 124 locations
ECM	Yes	Yes	Yes
Multi-transmission	Yes	Yes	Yes
Multi-copying w/Sorting	Yes	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)	Yes (50-150%)
TAD Type	No	No	DSP
OGM	No	No	Yes
ICM Recording Time	No	No	Yes, 30 min.
FAX Forwarding/Paging	Yes/No	Yes/No	Yes
FAX Retrieval	Yes	Yes	Yes
PCI (Missing link)	Ready	Ready	Ready
Message Center	No	No	Yes
Caller ID	UK, Sw., Holland (Ready for France)	UK, Sw., Holland (Ready for France)	UK, Sw., Holland (Ready for France)
Fax-/Voice-on-demand	No	No	Voice-on-demand
Mail Box	No	No	Yes, 5
Remote Control	Yes	Yes	Yes
Toll Saver	No	No	Yes
Memo/2-Way Recording	No	No	Yes
Auto Reduction	Yes	Yes	Yes
Confidential Mailbox	No	No	No
Optional Memory	No	No	No

Model	MFC1770	MFC1870MC	MFC1970MC
Color	White (1138)	White (1138)	White (1138)
Modem Speed	9600 bps	14400 bps	14400 bps
CCITT Group	G3	G3	G3
Coding Method	MH	MH	MH
Transmission Speed	15 sec.	9 sec.	9 sec.
Input/Output Width	8.5"/8.5"	8.5"/8.5"	8.5"/8.5"
ADF Capacity (pages)	20	20	20
Recording Paper Loadable	200 sheets	200 sheets	200 sheets
Paper Size	Letter/Legal/A4	Letter/Legal/A4	Letter/Legal/A4
Ribbon Life (Letter-size print)	450 pages	450 pages	450 pages
Handset	Yes	Yes	Yes
LCD Size	16 x 1	16 x 1	16 x 1
On-screen Programming	Yes	Yes	Yes
Gray Scale	64 by Dithered	64 by Dithered	64 by E/D
Smoothing	Yes	Yes	Yes
One-touch Dial	12 x 2	12 x 2	12 x 2
Speed Dial	36	36	100
Telephone Index	Yes	Yes	Yes
Multi-resolution Transmission	Yes	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Distinctive Ringing	Yes	Yes	Yes
Next Fax-reservation	Yes	Yes	Yes
Help	Yes	Yes	Yes
TAD Interface	Yes	Yes	Yes
Coverpage	Yes, Super	Yes, Super	Yes, Super
Polling Type	Sim/Del/Seq	Sim/Del/Seq	Sim/Del/Seq
Receive Password (password plus)	Yes	Yes	Yes
Delayed Transmission	3, timers	3, timers	3, timers
Call Reservation	Yes	Yes	Yes
Call-back Message	Yes	Yes	Yes
Speaker Phone	Monitor	Yes, Full-duplex	Yes, Full-duplex
Activity Report	Yes	Yes	Yes
Transmission Verification Report	Yes	Yes	Yes
Page Memory	512 KB (20 pages)	512 KB (20 pages)	1 MB (50 pages)
Out-of-paper Reception	Yes	Yes	Yes
Quick Scan	Yes	Yes	Yes
Super Quick Scan	No	No	No
Broadcasting	Yes	Yes	Yes
ECM	Yes	Yes	Yes
Multi-transmission	Yes	Yes	Yes
Multi-copying w/Sorting	Yes	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)	Yes (50-150%)
TAD Type	No	DSP	DSP
OGM	No	Yes	Yes
ICM Recording Time	No	Yes, 15 min.	Yes, 30 min.
FAX Forwarding/Paging	Yes	Yes	Yes
FAX Retrieval	Yes	Yes	Yes
PCI (Missing link)	Included (MFL3)	Included (MFL3)	Included (MFL3)
Message Center	No	Yes	Yes
Caller ID	Yes	Yes	Yes
Fax-/Voice-on-demand	No	Voice-on-demand	Voice-on-demand
Mail Box	No	Yes	Yes
Remote Control	Yes	Yes	Yes
Toll Saver	No	Yes	Yes
Memo/2-Way Recording	No	Yes	Yes
Auto Reduction	Yes	Yes	Yes
Confidential Mailbox	No	No	No
Optional Memory	No	No	No

CHAPTER II.

INSTALLATION

CHAPTER III.

THEORY OF OPERATION

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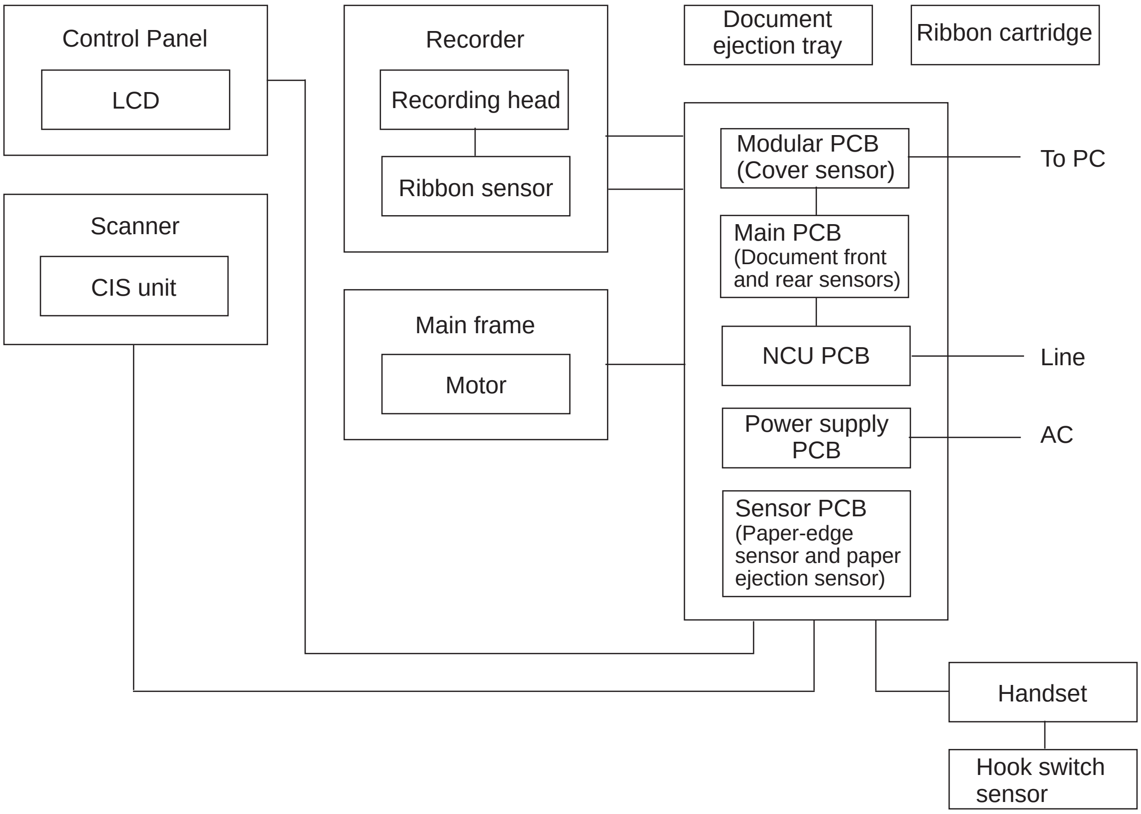
1. OVERVIEW

1.1 Functional Block Diagram


Control Panel
LCD
Recorder
Recording head
Ribbon sensor
Document ejection tray
Ribbon cartridge
Scanner
CIS unit
Main frame
Motor
Modular PCB (Cover sensor)
Main PCB (Document front and rear sensors)
NCU PCB
Power supply PCB
Sensor PCB (Paper-edge sensor and paper ejection sensor)
To PC
Line
AC
Handset
Hook switch sensor

2. MECHANISMS

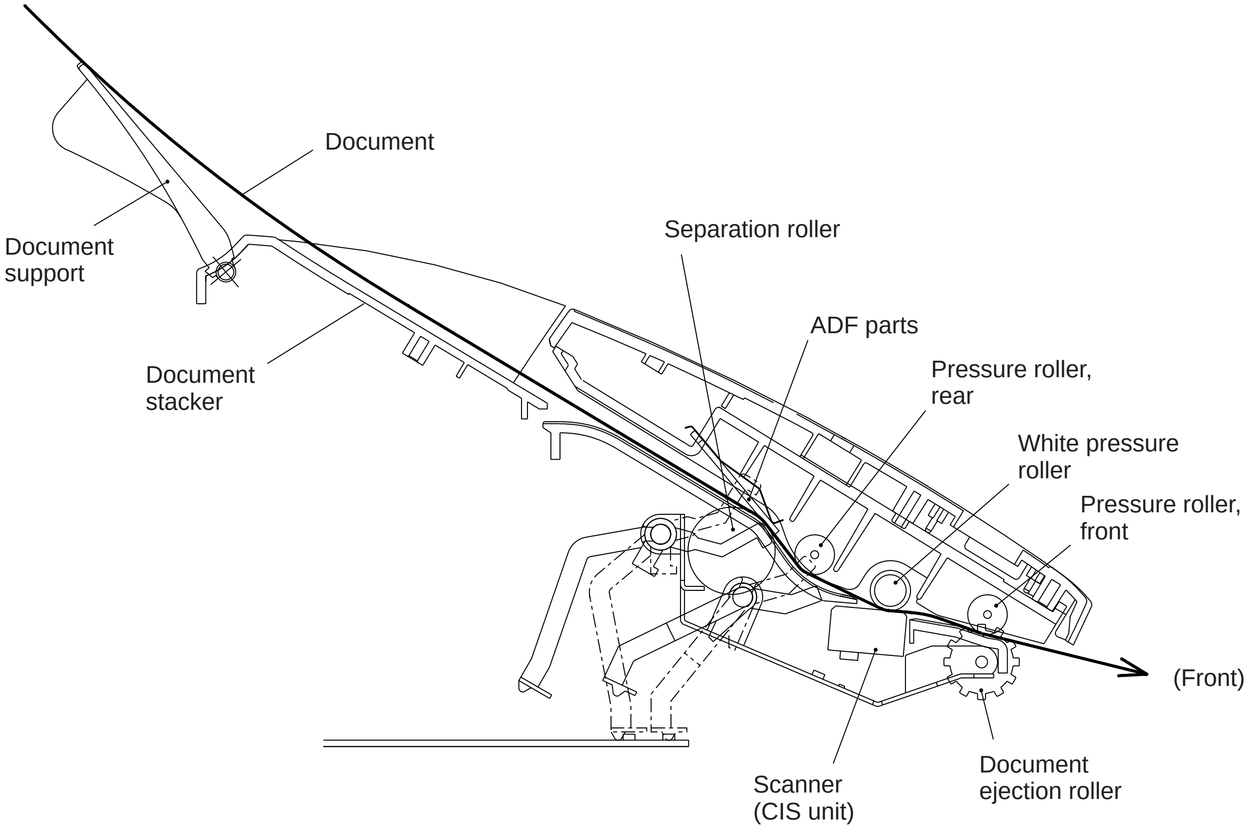
The equipment is classified into the following mechanisms:

■ Transmitting Mechanism	Feeding and scanning documents
■ Receiving Mechanism	Feeding paper and printing data
■ Power Transmission Mechanism	Switching the power transmission route
■ Sensors and Actuators	

2.1 Transmitting Mechanism (Feeding and scanning documents)

The transmitting mechanism consists of the document stacker, automatic document feeder (ADF), document feeding related rollers, scanner, and document sensors. (For details about the sensors, refer to Section 2.4.)

For the drive power source, refer to Section 2.3.


Document
Document support
Document stacker
Separation roller
ADF parts
Pressure roller, rear
White pressure roller
Pressure roller, front
(Front)
Scanner (CIS unit)
Document ejection roller

2.1.1 Automatic document feeder (ADF)

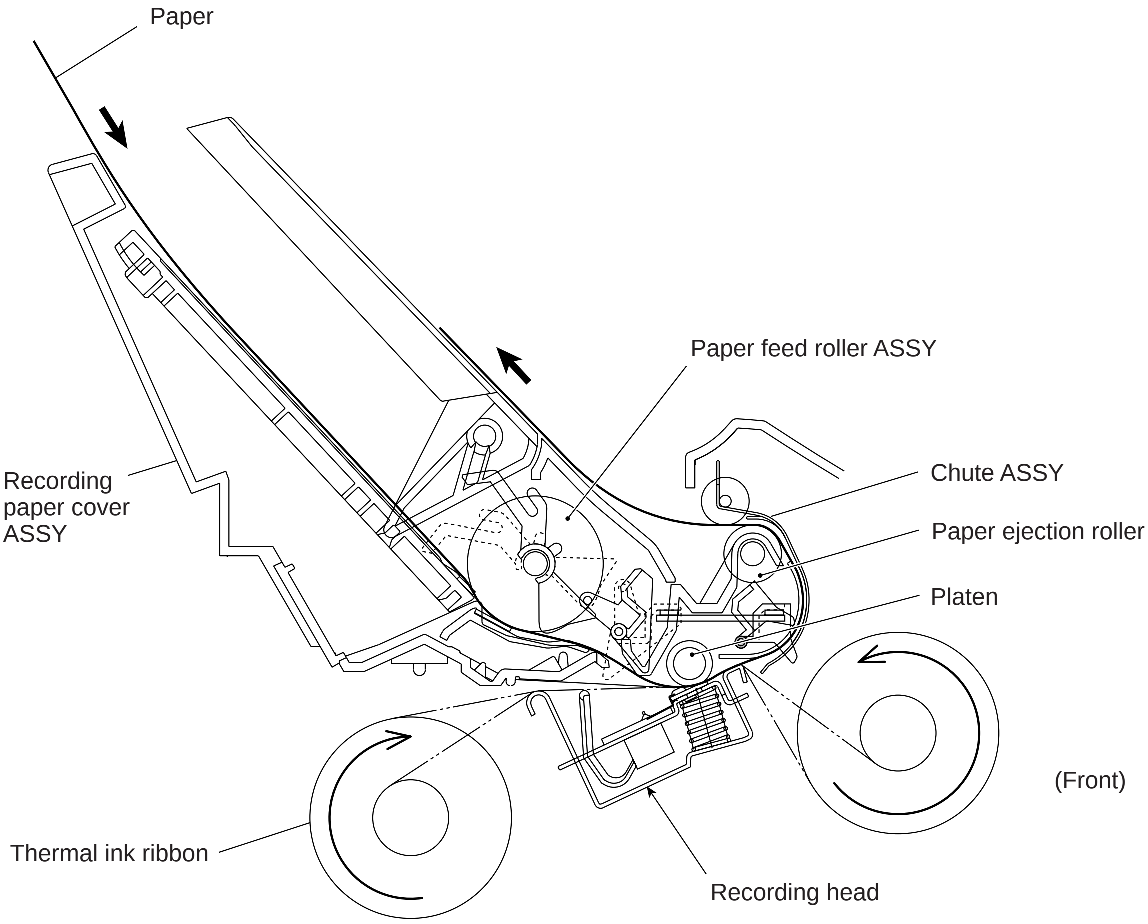
If the operator sets documents on the stacker and starts the transmitting operation, the ADF (consisting of the separation roller and ADF parts) feeds those documents into the equipment, starting from the bottom sheet to the top, page by page. Each document advances to the scanner, and then it is fed with the white pressure roller and document ejection roller.

2.1.2 Scanner

The scanner uses a contact image sensor (CIS) unit which consists of an LED array illuminating documents, a self-focus lens array collecting the reflected light, a CIS PCB carrying out photoelectric conversion to output picture element data, and a cover glass on which a document advances. When the document passes between the white pressure roller and the cover glass, it is scanned.

2.2 Receiving Mechanism (Feeding paper and printing data)

The receiving mechanism consists of the recording paper cover ASSY, paper feed roller ASSY, platen, thermal recording head, paper ejection roller, and sensors. (For details about the sensors, refer to Section 2.4.)


Paper
Paper feed roller ASSY
Chute ASSY
Paper ejection roller
Platen
Recording paper cover ASSY
(Front)
Thermal ink ribbon
Recording head

STEP 1: In the paper feeding mode

If the equipment receives data, the control electronics activates the solenoid and rotates the motor counterclockwise to drive the paper feed roller (and paper ejection roller). This pulls in a sheet of paper and feeds it until its leading edge reaches the point just before the printing position.

STEP 2: In the recording (platen drive & ribbon take-up) mode

The control electronics deactivates the solenoid and rotates the motor clockwise to drive the platen gear and the ribbon take-up gear as well as the paper ejection roller. This feeds the paper up to the printing position where the thermal recording head prints, as well as feeding the thermal ink ribbon.

STEP 3: In the paper ejecting mode

The same operation as for STEP 1 takes place so as to eject the paper.

2.3 Power Transmission Mechanism

The equipment has a single drive motor whose power transmission route can be switched by the planetary gear systems and the solenoid. This switching allows the equipment to function in four operation modes (scanning, paper feeding/ejecting, recording, and copying modes). For the details about the planetary gear systems, refer to Subsection 2.3.2.

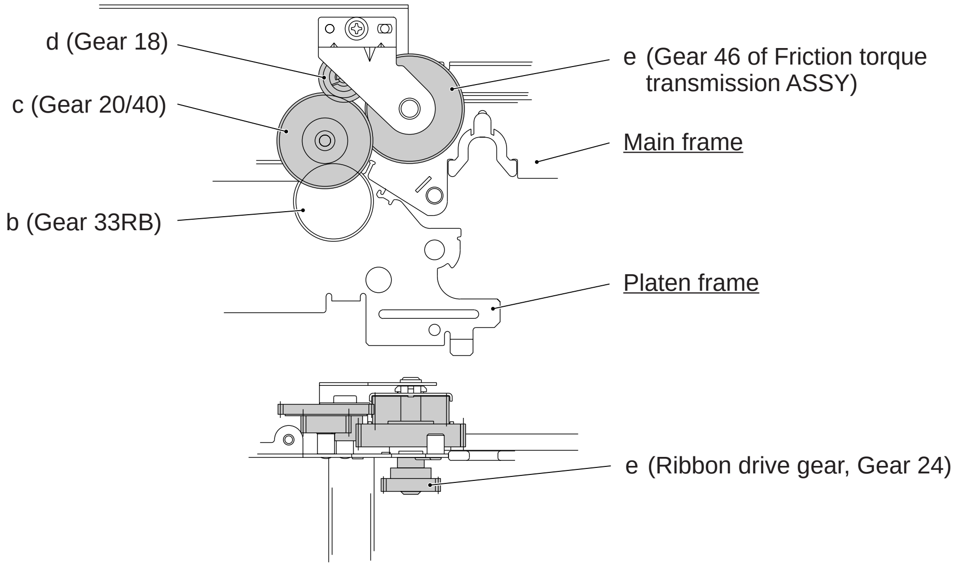
2.3.1 Structure of the gear train

At the left side of the equipment, the rotational torque of the motor on the main frame is transmitted to the gears on the main frame and then to the gears on the platen frame. These gears drive the document feeding/ejecting related rollers, paper feeding/ejecting related rollers, and the platen.

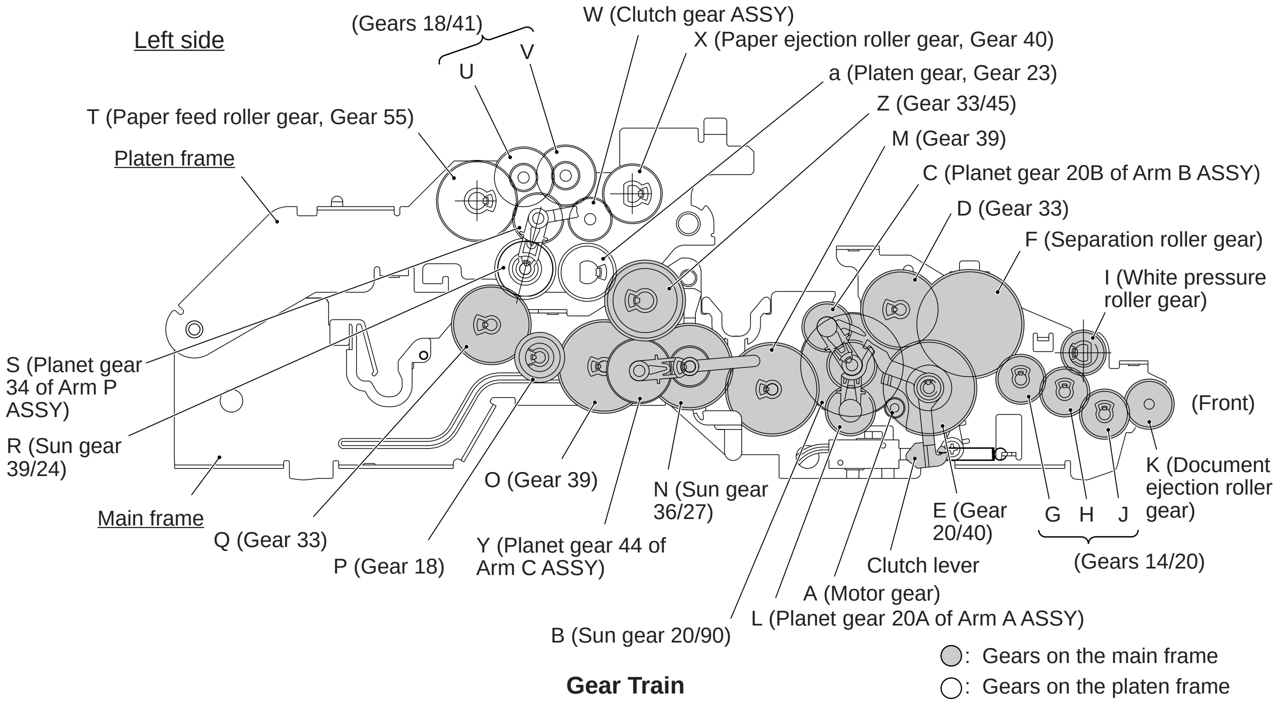
If the platen gear ("a" in the figure below) on the left end of the platen shaft rotates, the gear 33RB ("b") on the right end also rotates. This way, the rotational torque is transmitted to the gears on the right side of the equipment.

At the right side of the equipment, the rotational torque is further transmitted via the friction torque transmission ASSY to the ribbon drive gear ("e") which drives the ribbon take-up gear in the ribbon cartridge.

Right side


d (Gear 18)
c (Gear 20/40)
b (Gear 33RB)
e (Gear 46 of Friction torque transmission ASSY)
Main frame
Platen frame
e (Ribbon drive gear, Gear 24)

Left side


(Gears 18/41)
U
V
W (Clutch gear ASSY)
X (Paper ejection roller gear, Gear 40)
a (Platen gear, Gear 23)
Z (Gear 33/45)
M (Gear 39)
C (Planet gear 20B of Arm B ASSY)
D (Gear 33)
F (Separation roller gear)
I (White pressure roller gear)
T (Paper feed roller gear, Gear 55)
Platen frame
(Front)
S (Planet gear 34 of Arm P ASSY)
R (Sun gear 39/24)
Main frame
Q (Gear 33)
P (Gear 18)
O (Gear 39)
Y (Planet gear 44 of Arm C ASSY)
N (Sun gear 36/27)
E (Gear 20/40)
G H J
(Gears 14/20)
K (Document ejection roller gear)
Clutch lever
A (Motor gear)
L (Planet gear 20A of Arm A ASSY)
B (Sun gear 20/90)
●: Gears on the main frame
○: Gears on the platen frame

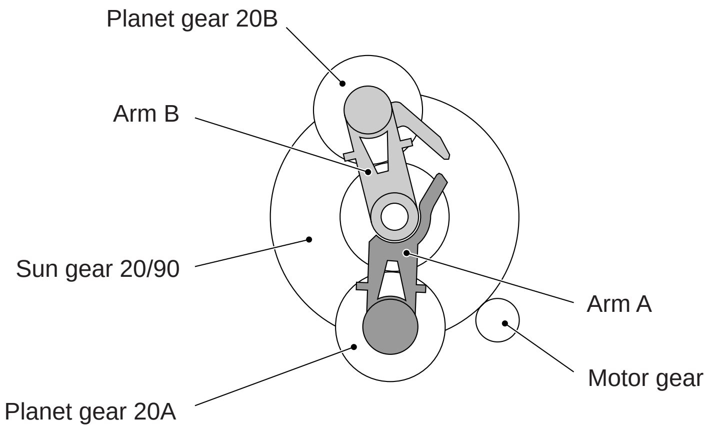
Gear Train

2.3.2 Description of planetary gear system

The equipment uses the following three planetary gear systems:

- Sun gear 20/90 ("B" in the figure given on the previous page) and its planet gears
- Sun gear 36/27 ("N") and its planet gear
- Sun gear 39/24 ("R") and its planet gear

This section describes the planetary gear system of the sun gear 20/90 ("B"). It consists of the sun gear 20/90, two planet gears 20, arm A, and arm B, as shown below.



Planetary Gear System

If the motor rotates, the sun gear 20/90 rotates so that the rotational torque is transmitted to the engagement between the sun gear and the planet gears 20. Since the arms and planet gears are so designed that the moment of the arms is less than that of the planet gears, the arms turn around the center shaft in the same direction as the sun gear 20/90.

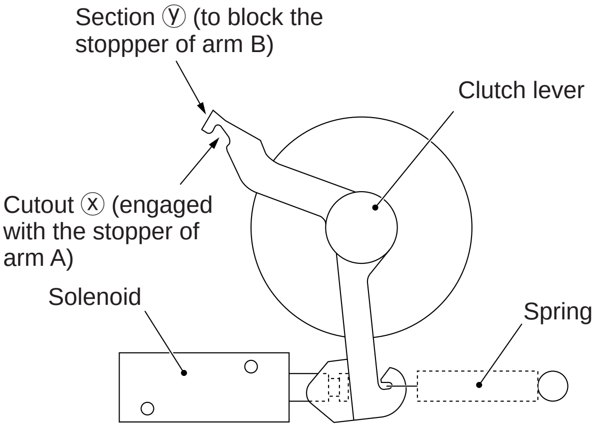
If the planet gear(s) becomes engaged with any other gear so that the arm cannot turn furthermore, the rotational torque of the sun gear 20/90 is transmitted to that planet gear. Accordingly, the planet gear starts rotation in the opposite direction of the sun gear 20/90.

2.3.3 Power transmission for four operation modes

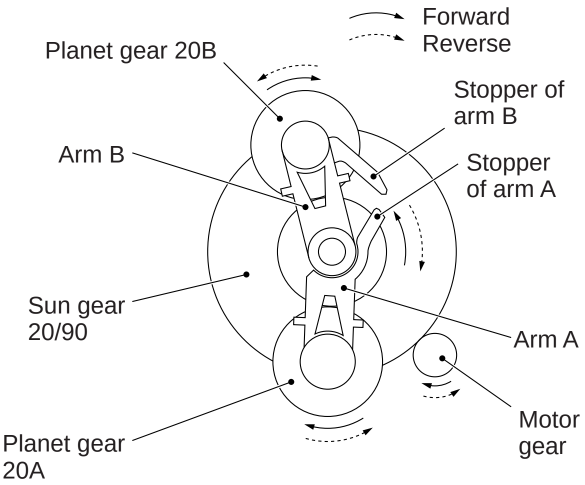
Depending upon the solenoid ON/OFF state and the motor rotation direction, the planetary gear train switches the power transmission route for the four operation modes.

Solenoid ON/OFF state

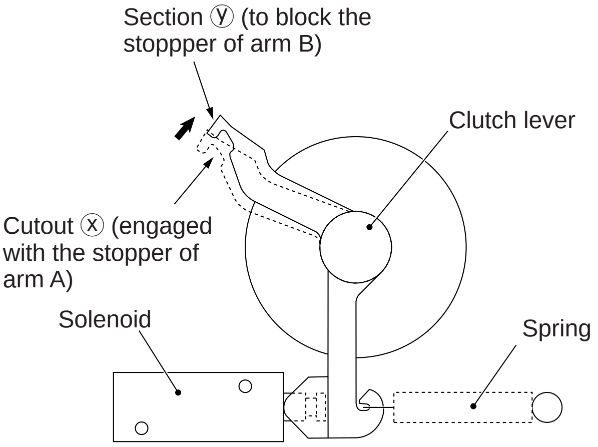
Solenoid: OFF


Section ⓨ (to block the stoppper of arm B)
Clutch lever
Cutout ⓧ (engaged with the stopper of arm A)
Solenoid
Spring

Motor rotation direction


Forward
Reverse
Planet gear 20B
Stopper of arm B
Arm B
Stopper of arm A
Sun gear 20/90
Arm A
Motor gear
Planet gear 20A

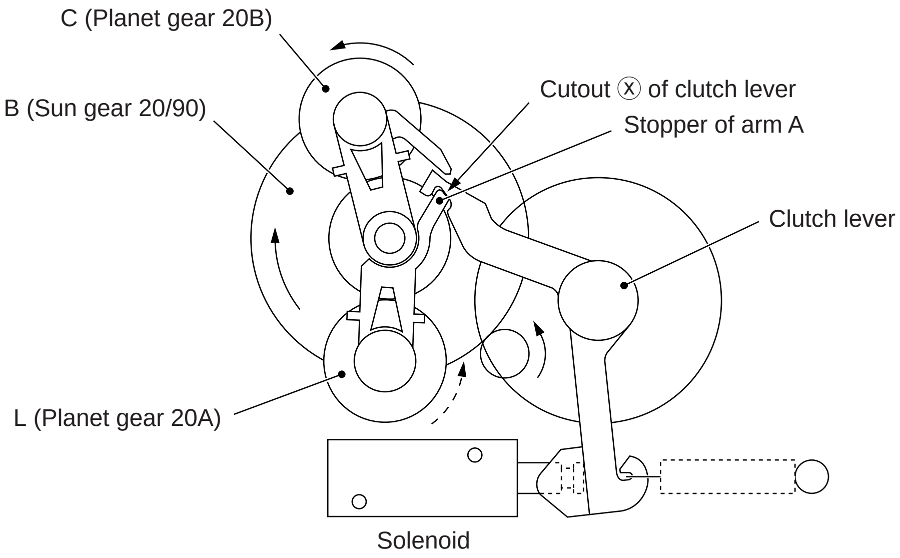
Solenoid: ON


Section ⓨ (to block the stoppper of arm B)
Clutch lever
Cutout ⓧ (engaged with the stopper of arm A)
Solenoid
Spring

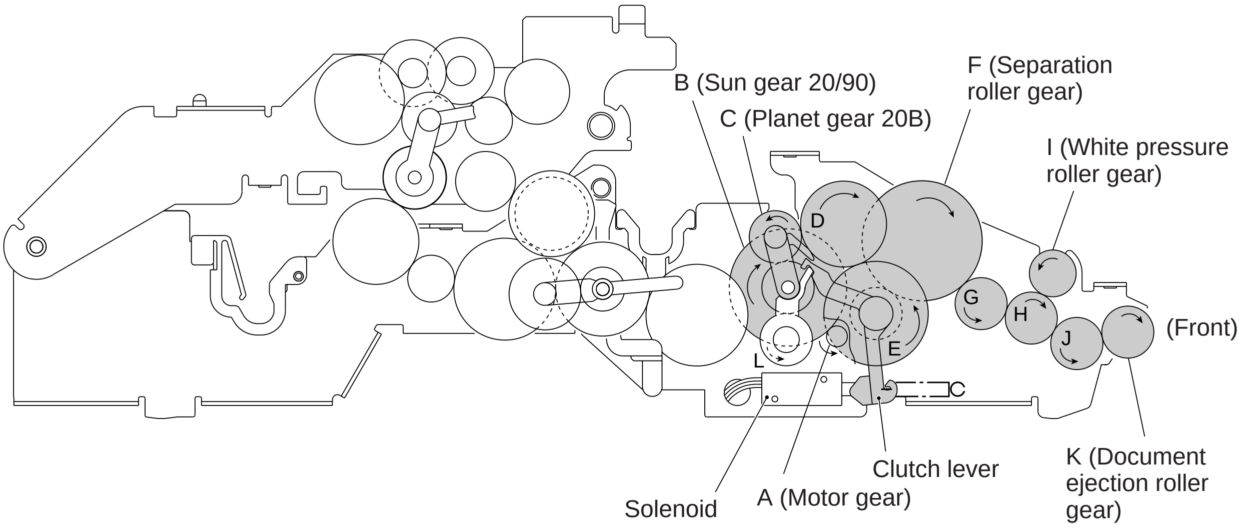
[1] Scanning mode (Solenoid: OFF, Motor rotation: Reverse)

In the scanning mode, the control electronics deactivates the solenoid. When the motor rotates in the reverse direction, the clutch lever turns counterclockwise with the spring so that its cutout ⓧ becomes engaged with the stopper of arm A. Once arm A is locked, the planet gear 20A ("L") will not be engaged with any other gear but simply idle.

The motor's rotational torque turns the sun gear 20/90 ("B") clockwise so that the planet gear 20B ("C") transmits the torque to the separation roller gear ("F"), white pressure roller gear ("I") and document ejection roller gear ("K") via the several gears.


C (Planet gear 20B)
B (Sun gear 20/90)
Cutout ⓧ of clutch lever
Stopper of arm A
Clutch lever
L (Planet gear 20A)
Solenoid

Arm A Locked by Cutout ⓧ of Clutch Lever

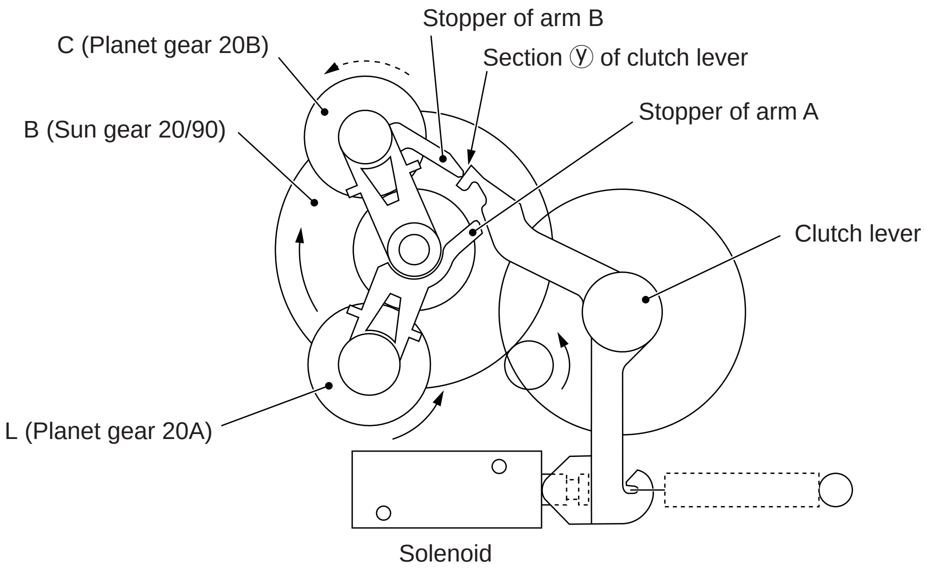

B (Sun gear 20/90)
C (Planet gear 20B)
F (Separation roller gear)
I (White pressure roller gear)
D
G
H
J
E
L
(Front)
Clutch lever
Solenoid
A (Motor gear)
K (Document ejection roller gear)

Active Gears

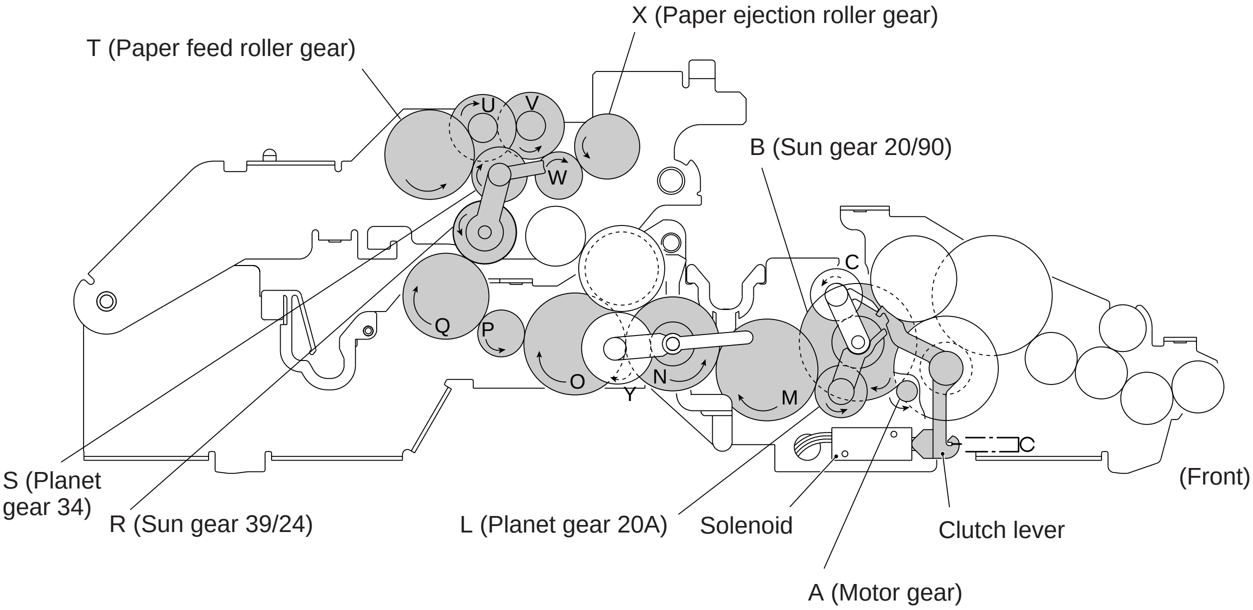
[2] Paper feeding/ejecting mode (Solenoid: ON, Motor rotation: Reverse)

In the paper feeding/ejecting mode, the control electronics activates the solenoid to release the stopper of arm A. When the motor rotates in the reverse direction, the sun gear 20/90 ("B") rotates clockwise so that the planet gear 20A ("L") transmits the torque via the gear 39 ("M") and other gears to the paper feed roller gear ("T") and paper ejection roller gear ("X").

Since the stopper of arm B is blocked by the section ⓨ of the clutch lever, the planet gear 20B ("C") is merely idle without engaging with any other gear.


Stopper of arm B
C (Planet gear 20B)
Section ⓨ of clutch lever
Stopper of arm A
B (Sun gear 20/90)
Clutch lever
L (Planet gear 20A)
Solenoid

Arm B Blocked by Section ⓨ of Clutch Lever


X (Paper ejection roller gear)
T (Paper feed roller gear)
U
V
W
B (Sun gear 20/90)
C
Q
P
O
Y
N
M
(Front)
S (Planet gear 34)
R (Sun gear 39/24)
L (Planet gear 20A)
Solenoid
Clutch lever
A (Motor gear)

Active Gears

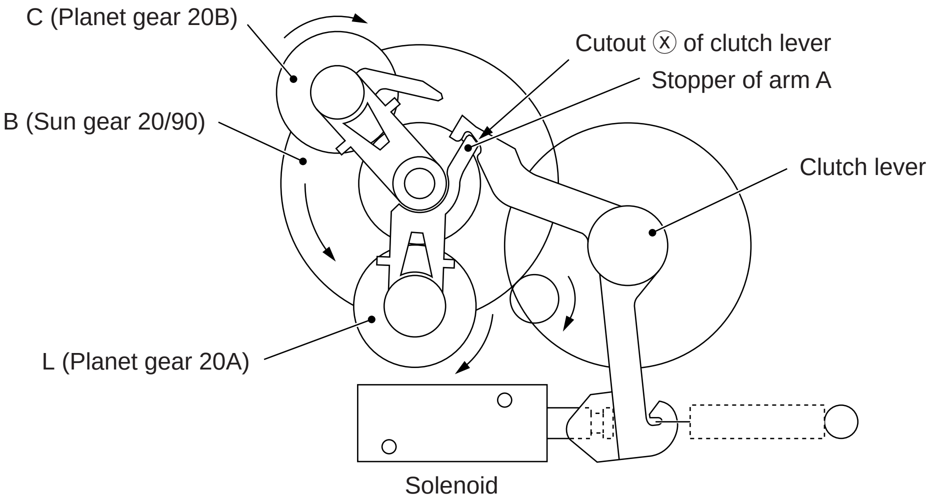
[3] Recording mode (Solenoid: OFF, Motor rotation: Forward)

In the recording mode, the control electronics deactivates the solenoid. When the motor rotates in the forward direction, the clutch lever turns counterclockwise with the spring so that its cutout ⓧ becomes engaged with the stopper of arm A. Once arm A is locked, the planet gear 20A ("L") will not be engaged with any other gear but simply idle.

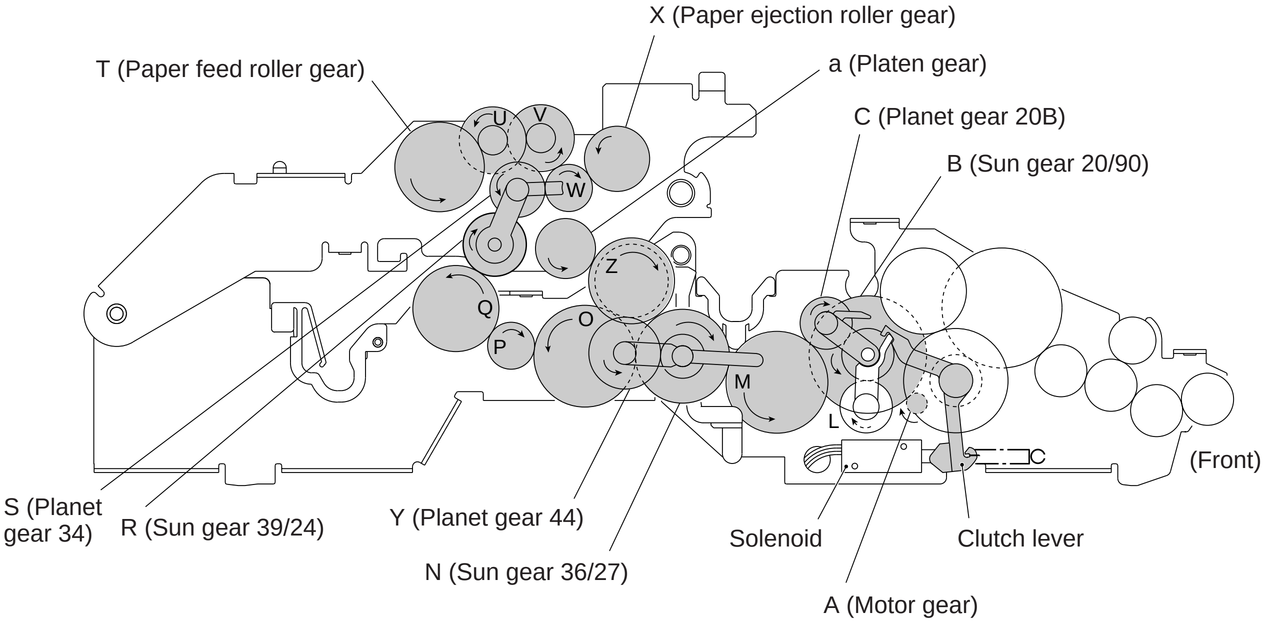
The motor's rotational torque turns the sun gear 20/90 ("B") counterclockwise so that the planet gear 20B ("C") transmits the torque via the gear 39 ("M") and other gears to the platen gear ("a") as well as the paper ejection roller gear ("X").

The platen advances recording paper and its paper movement rotates the paper feed roller. Consequently, the paper feed roller shaft rotates faster than the paper feed roller gear ("T").

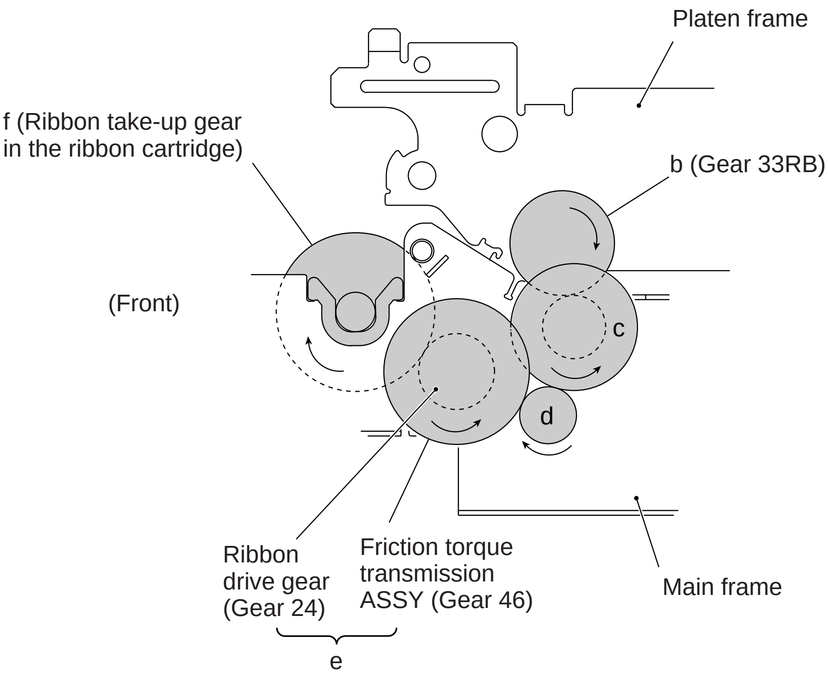
If the platen gear ("a" in the figure below) on the left end of the platen shaft rotates, the gear 33RB ("b") on the right end also rotates so as to drive the friction torque transmission ASSY and ribbon drive gear ("e") that rotates the ribbon take-up gear ("f") in the ribbon cartridge, as shown on the next page.


C (Planet gear 20B)
Cutout ⓧ of clutch lever
Stopper of arm A
B (Sun gear 20/90)
Clutch lever
L (Planet gear 20A)
Solenoid

Arm A Locked by Cutout ⓧ of Clutch Lever


X (Paper ejection roller gear)
T (Paper feed roller gear)
a (Platen gear)
C (Planet gear 20B)
B (Sun gear 20/90)
U
V
W
Z
Q
O
P
M
L
C
(Front)
S (Planet gear 34)
R (Sun gear 39/24)
Y (Planet gear 44)
N (Sun gear 36/27)
Solenoid
Clutch lever
A (Motor gear)

Active Gears on the Left Side

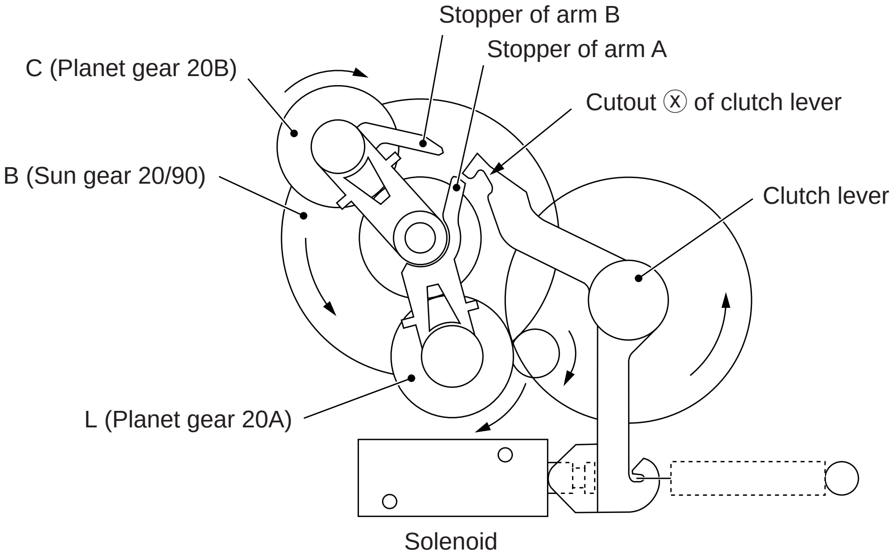

Platen frame
f (Ribbon take-up gear
in the ribbon cartridge)
b (Gear 33RB)
(Front)
c
d
Ribbon
drive gear
(Gear 24)
Friction torque
transmission
ASSY (Gear 46)
Main frame
e

Active Gears on the Right Side

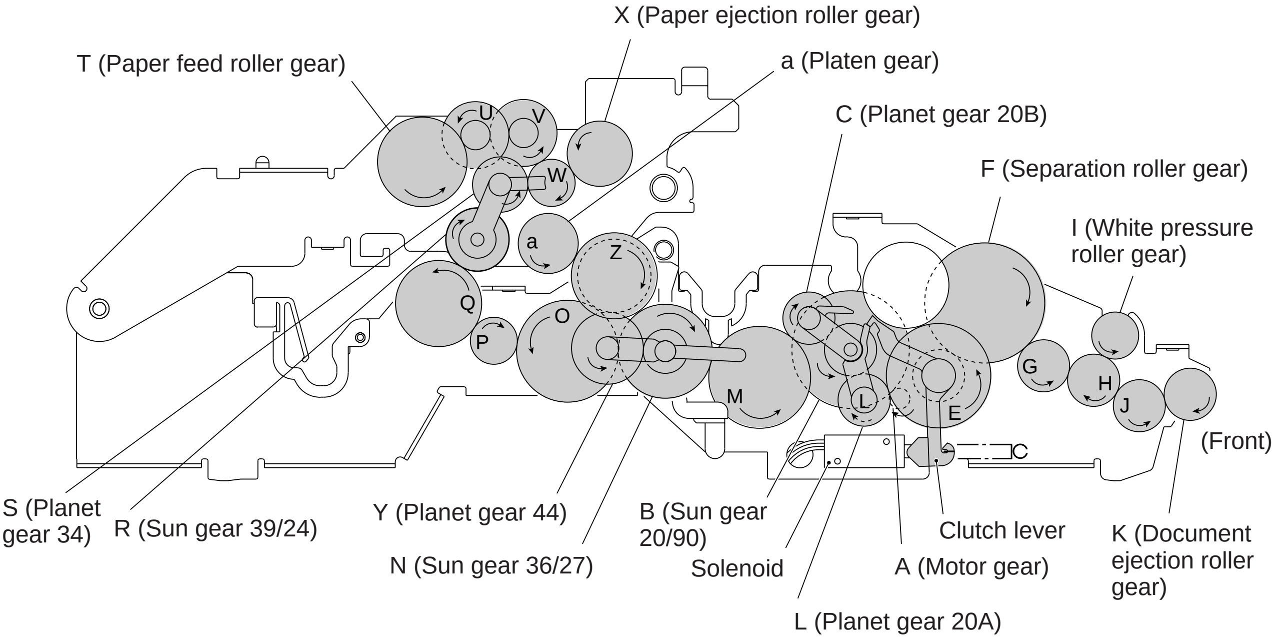
[4] Copying mode (Solenoid: ON, Motor rotation: Forward)

The control electronics activates the solenoid to release the stopper of arm A from the clutch lever. When the motor rotates in the forward direction, the sun gear 20/90 ("B") rotates counterclockwise so that the planet gear 20A ("L") transmits the torque to the document scanner mechanism (e.g., the separation roller gear ("F"), white pressure roller gear ("I") and document ejection roller gear ("K")) and the planet gear 20B ("C") transmits the torque to the recording mechanism (e.g., the platen gear ("a"), paper feed roller gear ("T"), and paper ejection roller gear ("X")).

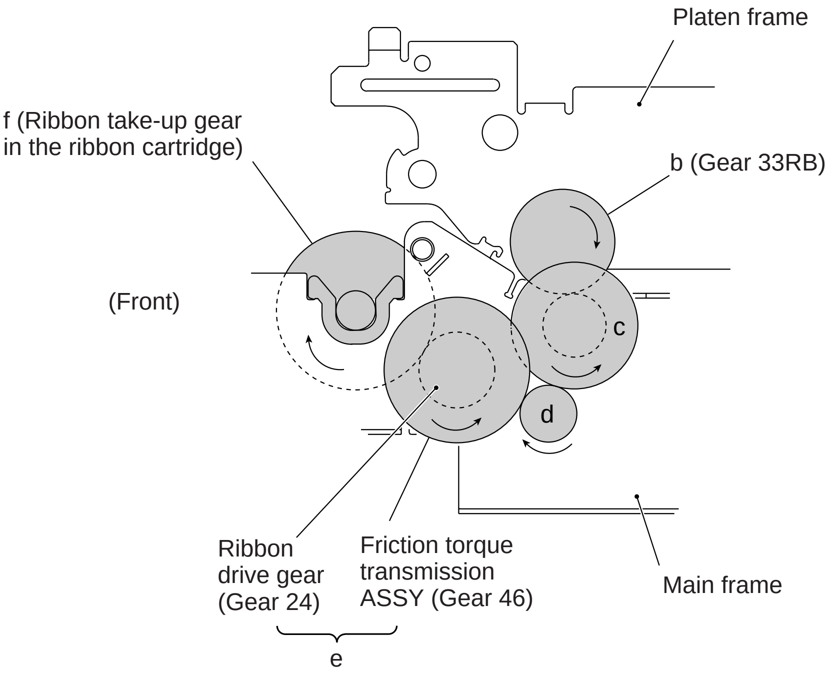
If the platen gear ("a" in the figure below) on the left end of the platen shaft rotates, the gear 33RB ("b") on the right end also rotates so as to drive the friction torque transmission ASSY and ribbon drive gear ("e") that rotates the ribbon take-up gear ("f") in the ribbon cartridge, as shown on the next page.


Stopper of arm B
Stopper of arm A
C (Planet gear 20B)
Cutout ⓧ of clutch lever
B (Sun gear 20/90)
Clutch lever
L (Planet gear 20A)
Solenoid

Arm A Released from Coutout Ⓧ of Clutch Lever


X (Paper ejection roller gear)
T (Paper feed roller gear)
a (Platen gear)
C (Planet gear 20B)
F (Separation roller gear)
I (White pressure roller gear)
U
V
W
a
Z
Q
O
P
M
G
H
J
L
E
(Front)
S (Planet gear 34)
R (Sun gear 39/24)
Y (Planet gear 44)
N (Sun gear 36/27)
B (Sun gear 20/90)
Solenoid
Clutch lever
A (Motor gear)
K (Document ejection roller gear)
L (Planet gear 20A)

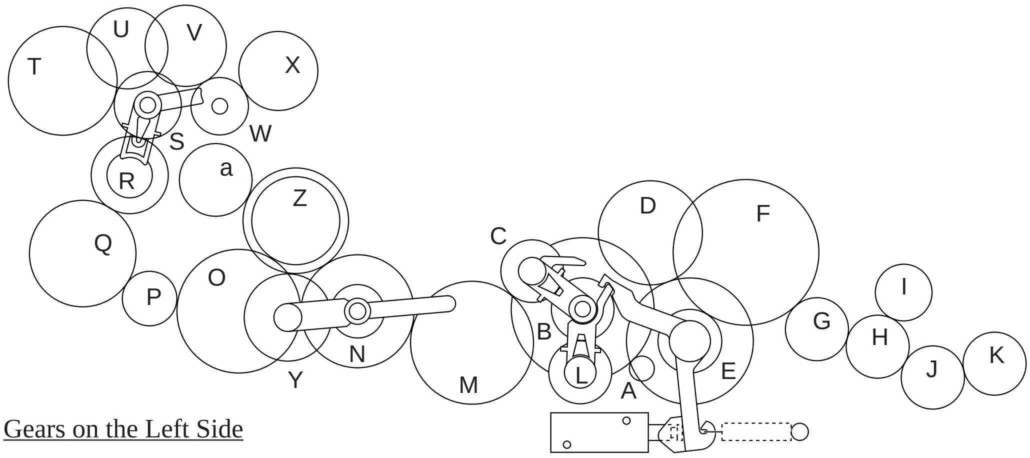
Active Gears on the Left Side


Platen frame
f (Ribbon take-up gear in the ribbon cartridge)
b (Gear 33RB)
(Front)
c
d
Ribbon drive gear (Gear 24)
Friction torque transmission ASSY (Gear 46)
Main frame
e

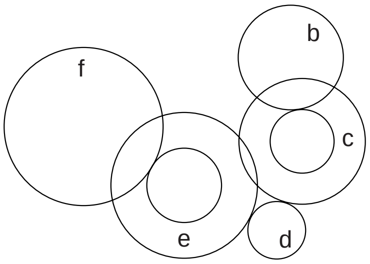
Active Gears on the Right Side

2.3.4 Power transmission route

Rotation of the motor gear is transmitted as shown below.



Gears on the Left Side



Gears on the Right Side

A: Motor gear
B: Sun gear 20/90
C: Planet gear 20B
D: Gear 33
E: Gear 20/40
F: Separation roller gear
G: Gear 14/20
H: Gear 14/20
I: White pressure roller gear
J: Gear 14/20
K: Document ejection roller gear
L: Planet gear 20A
M: Gear 39
N: Sun gear 36/27
O: Gear 39
P: Gear 18

Q: Gear 33
R: Sun gear 39/24
S: Planet gear 34
T: Paper feed roller gear
U: Gear 18/41
V: Gear 18/41
W: Clutch gear
X: Paper ejection roller gear, Gear 40
Y: Planet gear 44
Z: Gear 33/45
a: Platen gear, Gear 23
b: Gear 33RB
c: Gear 20/40
d: Gear 18
e: Friction torque transmission ASSY (Gear 46) and ribbon drive gear (Gear 24)
f: Ribbon take-up gear in the ribbon cartridge

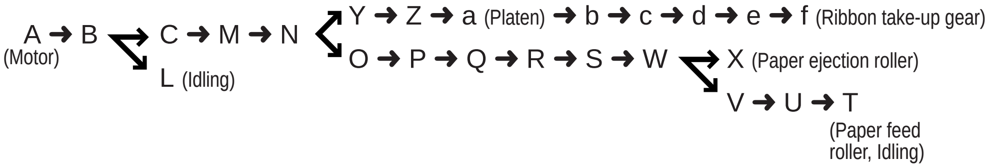
[1] Scanning Mode (Solenoid: OFF, Motor rotation: reverse)

A (Motor) ➜ B ➜ C ➜ D ➜ E ➜ F (Separation roller) ➜ G ➜ H ➜ I (White pressure roller)
B ➜ L (Idling)
H ➜ J ➜ K (Document ejection roller)

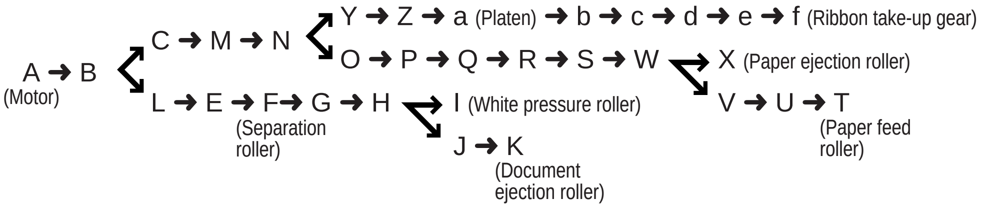
[2] Paper Feeding/Ejecting Mode (Solenoid: ON, Motor rotation: reverse)

B ➜ C (Idling)
A (Motor) ➜ B ➜ L ➜ M ➜ N ➜ O ➜ P ➜ Q ➜ R ➜ S ➜ T (Paper feed roller) ➜ U ➜ V ➜ W ➜ X (Paper ejection roller)
N ➜ Y (Idling)

[3] Recording Mode (Solenoid: OFF, Motor rotation: forward)


A ➜ B
(Motor)
C ➜ M ➜ N
L (Idling)
Y ➜ Z ➜ a (Platen) ➜ b ➜ c ➜ d ➜ e ➜ f (Ribbon take-up gear)
O ➜ P ➜ Q ➜ R ➜ S ➜ W
X (Paper ejection roller)
V ➜ U ➜ T
(Paper feed roller, Idling)

[4] Copying Mode (Solenoid: ON, Motor rotation: forward)


A ➜ B
(Motor)
C ➜ M ➜ N
Y ➜ Z ➜ a (Platen) ➜ b ➜ c ➜ d ➜ e ➜ f (Ribbon take-up gear)
O ➜ P ➜ Q ➜ R ➜ S ➜ W
X (Paper ejection roller)
V ➜ U ➜ T
(Paper feed roller)
L ➜ E ➜ F➜ G ➜ H
(Separation roller)
I (White pressure roller)
J ➜ K
(Document ejection roller)

2.4 Sensors and Actuators

This equipment has four photosensors and three mechanical switches (two for the FAX1010) as described below.

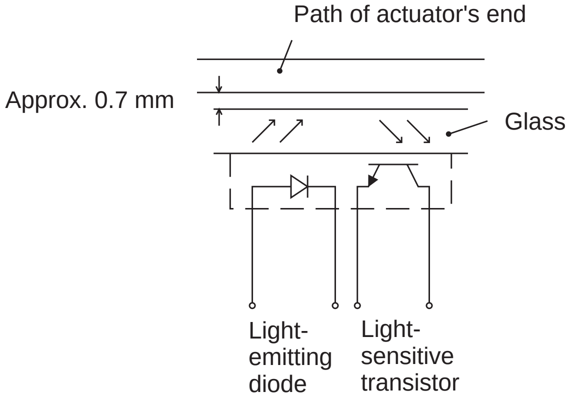
Sensor name	Type	Located on
Document front sensor	Photosensor (PH1)	Main PCB
Document rear sensor	Photosensor (PH2)	Main PCB
Paper ejection sensor	Photosensor (PH1)	Sensor PCB
Paper-edge sensor	Photosensor (PH2)	Sensor PCB
Cover sensor	Mechanical switch (SW1)	Modular PCB
Ribbon sensor	Mechanical switch (SW1)	Recording head
Hook switch sensor*	Mechanical switch (SW1)	Hook switch PCB

- Document front sensor which detects the presence of documents.
- Document rear sensor which detects the leading and trailing edges of pages to tell the control circuitry when the leading edge of a new page has reached the starting position and when the scan for that page is over.
- Paper ejection sensor which detects whether a paper jam has occurred.
- Paper-edge sensor which detects the leading and trailing edges of paper and the presence of paper as well as detecting whether the paper front cover is closed.

These photosensors are of a reflection type consisting of a light-emitting diode and a light-sensitive transistor. Each of them has an actuator separately arranged (see the next page), except that the paper-edge sensor has two actuators for sensing the paper and the paper front cover. When an actuator is not activated, its white end lies in the path of light issued from the light-emitting diode and reflects its light so that the reflected light enters the light-sensitive transistor. If a document or paper comes in so as to activate the actuator, the actuator's white end goes out of the light path and no reflected light enters the light-sensitive transistor. This way, the sensor detects the presence of documents or paper.

- Cover sensor which detects whether the recording paper cover ASSY is closed.
- Ribbon sensor which detects whether the ink ribbon is loaded.
- Hook switch sensor* which detects whether the handset is placed on the handset mount.

The cover sensor has an actuator separately arranged (see page III-18). If the actuator is activated, its lower end releases the cover sensor lever so that the sensor signals the detection.



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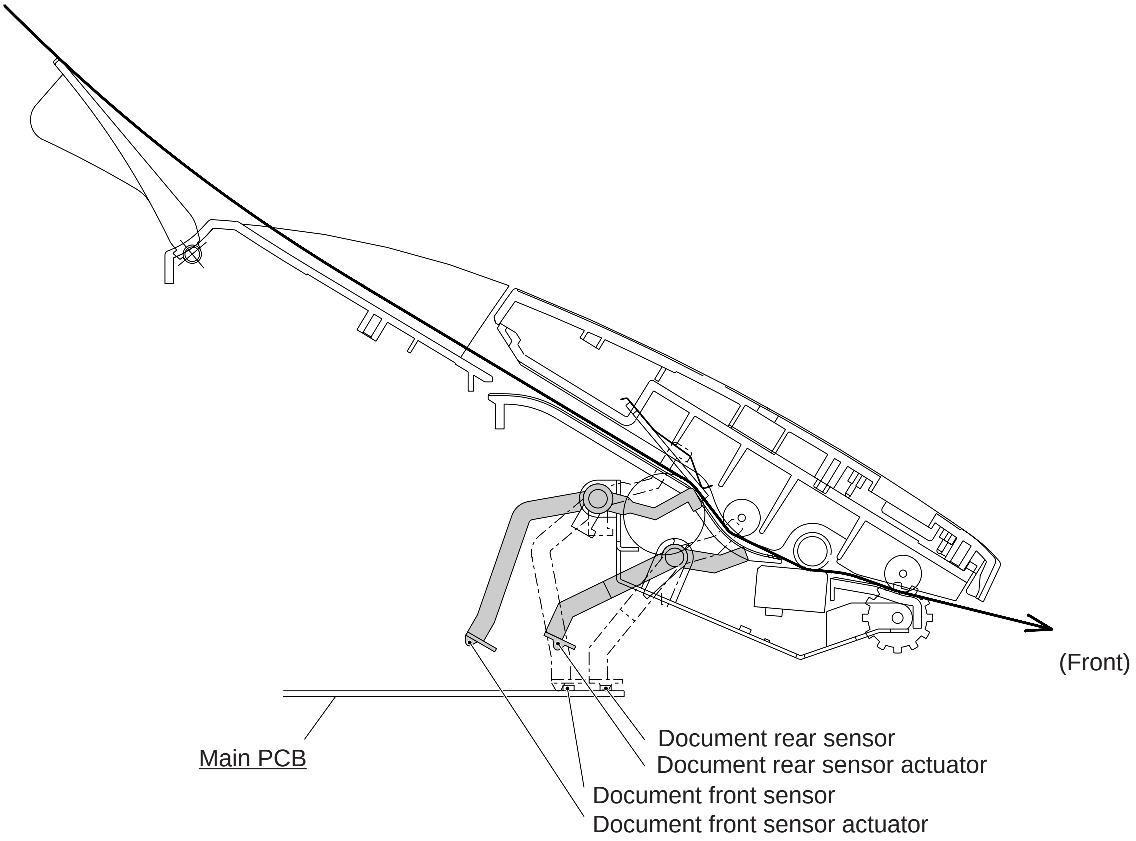
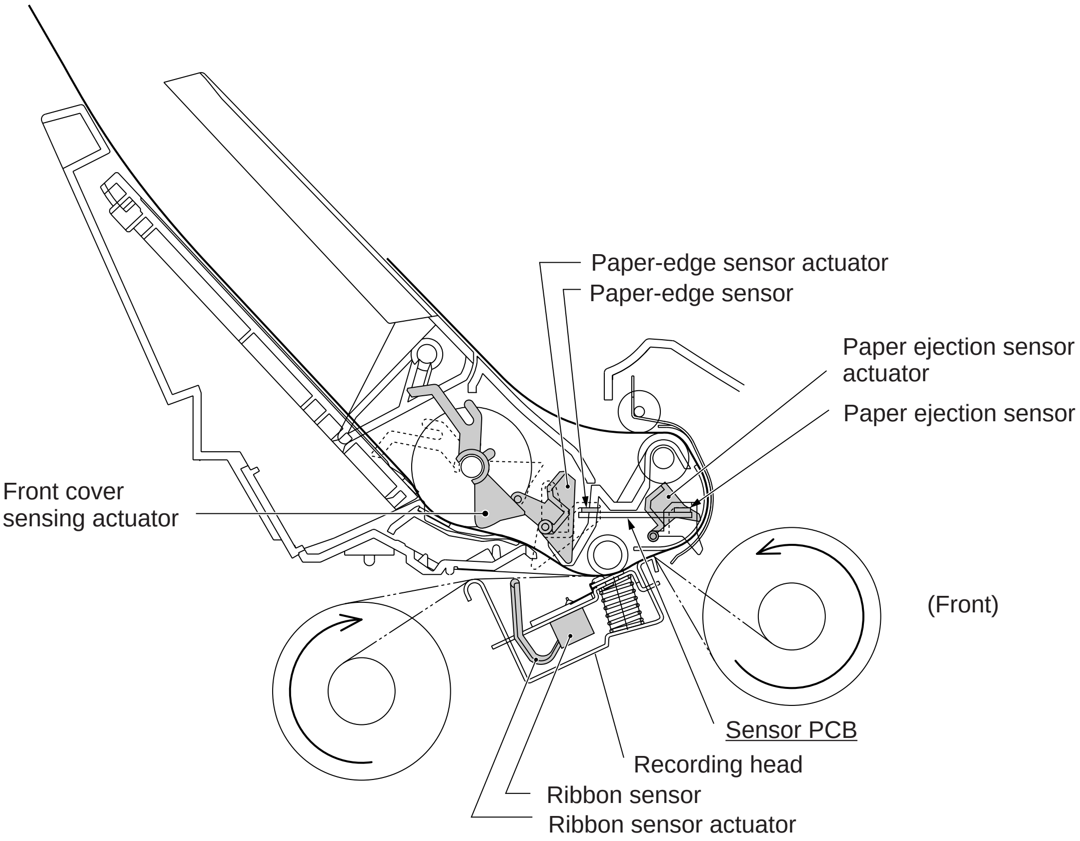
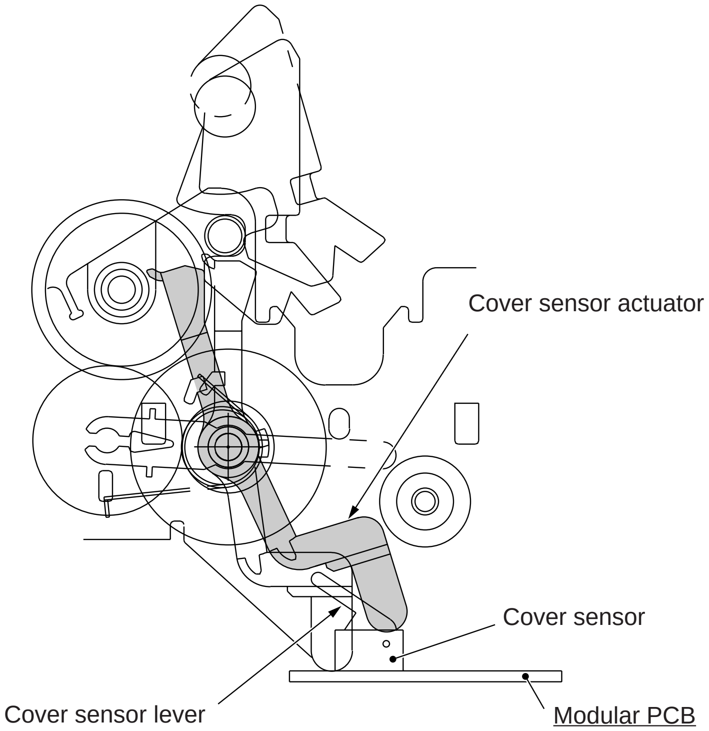
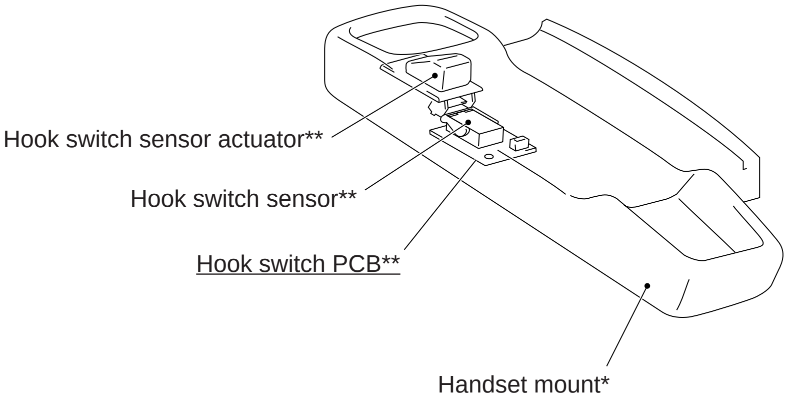
* Not provided on the FAX1010


(Front)
Main PCB
Document rear sensor
Document rear sensor actuator
Document front sensor
Document front sensor actuator


Paper-edge sensor actuator
Paper-edge sensor
Paper ejection sensor actuator
Paper ejection sensor
Front cover sensing actuator
(Front)
Sensor PCB
Recording head
Ribbon sensor
Ribbon sensor actuator

Location of Sensors and Actuators (1)


Cover sensor actuator
Cover sensor
Cover sensor lever
Modular PCB


Hook switch sensor actuator**
Hook switch sensor**
Hook switch PCB**
Handset mount*

Location of Sensors and Actuators (2)

---

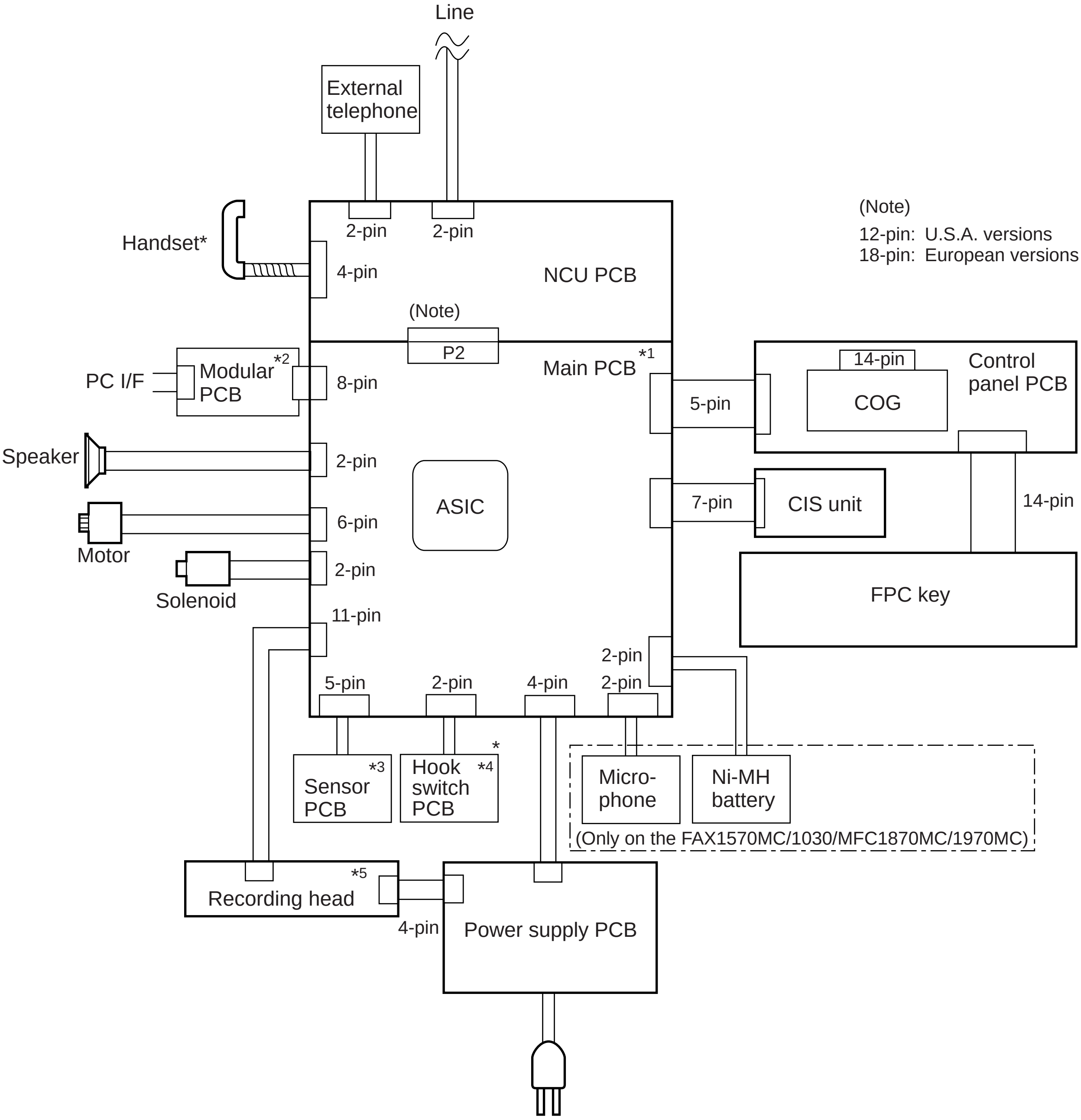
* Not provided on the FAX1010

** Not provided on the FAX1010 or those versions equipped with a Binatone handset

3. CONTROL ELECTRONICS

3.1 Configuration

The hardware configuration of the facsimile equipment is shown below.


Line
External telephone
Handset*
2-pin
2-pin
4-pin
NCU PCB
(Note)
P2
(Note)
12-pin: U.S.A. versions
18-pin: European versions
PC I/F
Modular PCB *2
8-pin
Main PCB *1
5-pin
14-pin
COG
Control panel PCB
Speaker
2-pin
ASIC
Motor
6-pin
7-pin
CIS unit
14-pin
Solenoid
2-pin
FPC key
11-pin
2-pin
5-pin
2-pin
4-pin
2-pin
Sensor PCB *3
Hook switch PCB *4
*
Micro-phone
Ni-MH battery
(Only on the FAX1570MC/1030/MFC1870MC/1970MC)
Recording head *5
4-pin
Power supply PCB

*1 On the main PCB are these sensors:
- Document front sensor (PH1)
- Document rear sensor (PH2)

*2 On the modular PCB is the cover sensor.

*3 On the sensor PCB are these sensors:
- Paper ejection sensor (PH1)
- Paper-edge sensor (PH2)

4 On the hook switch PCB is the hook switch sensor (SW1).

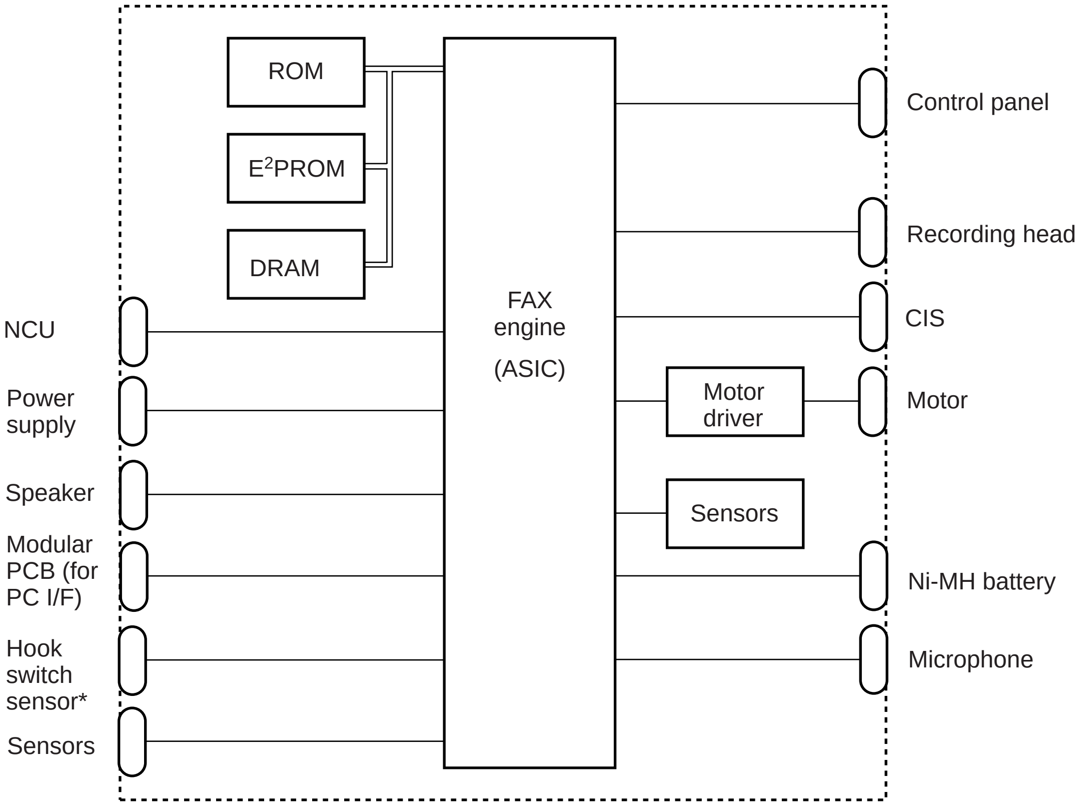
*5 On the recording head is the ribbon sensor (SW1).

* Not provided on the FAX1010

Configuration of Facsimile Equipment

3.2 Main PCB

The main PCB, which is the nucleus controlling the entire operation of the equipment, consists of a FAX engine (ASIC), memories, MODEM, motor drive circuitry, sensor detection circuitry, and analog circuits for scanning, recording, and power transmission shifting.

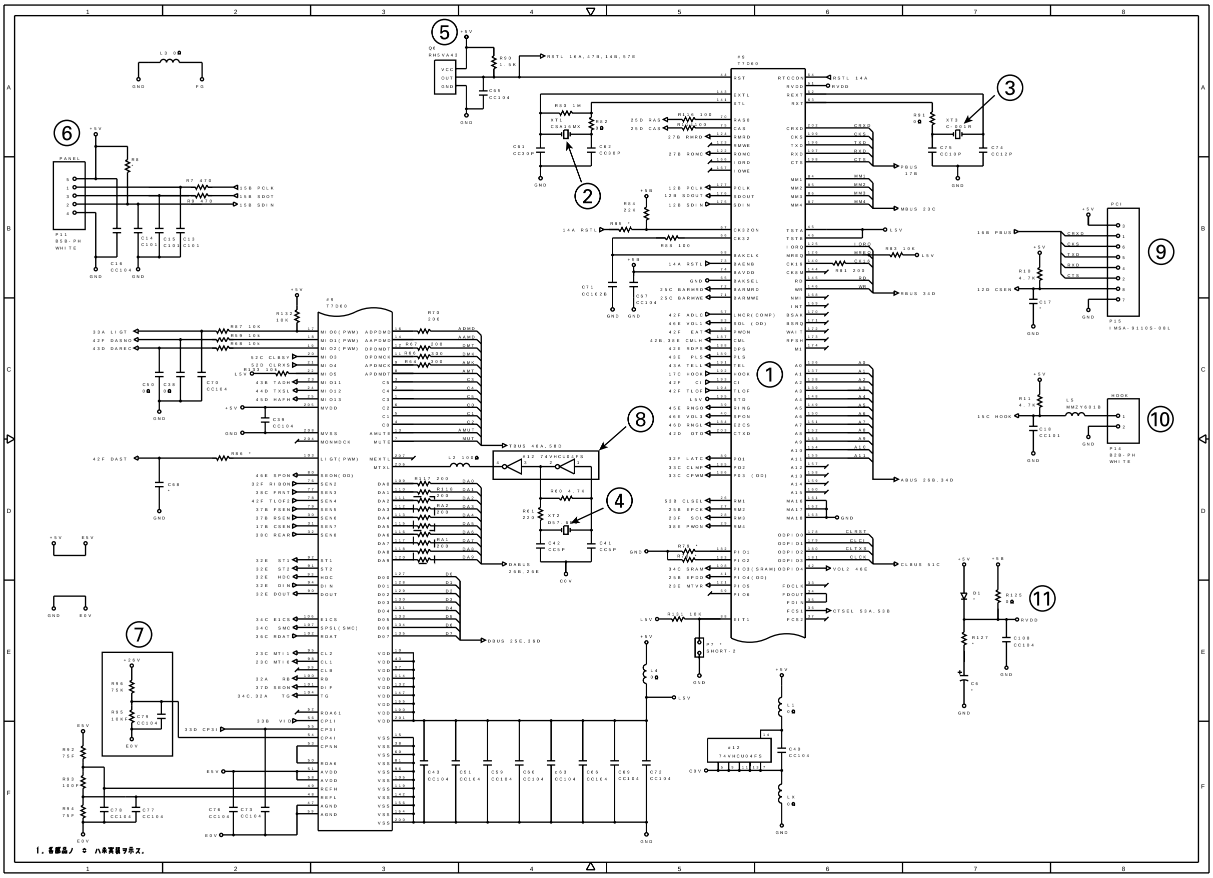

ROM
E²PROM
DRAM
FAX engine (ASIC)
NCU
Power supply
Speaker
Modular PCB (for PC I/F)
Hook switch sensor*
Sensors
Control panel
Recording head
CIS
Motor driver
Motor
Sensors
Ni-MH battery
Microphone

E^{2}PROM: Electrically Erasable Programmable Read-only Memory
DRAM: Dynamic Random Access Memory

** Not provided on the FAX1010 or those versions equipped with a Binatone handset

Block Diagram of Main PCB

On the following pages, the main PCB circuit diagrams are described on the basis of the FAX1570MC/1030/MFC1870MC/1970MC.



Main PCB Circuit Diagram 1/5

① FAX engine (ASIC) which integrates a CPU, digital portion of MODEM and gate array for managing the I/Os, memories, and drivers.

② XT1, oscillator for the CPU.

③ XT3, oscillator for the calendar clock.

④ XT2, oscillator for the MODEM.

⑤ Reset IC which turns on at the powering-on sequence and at any of the reset operations.

⑥ Connector for the control panel

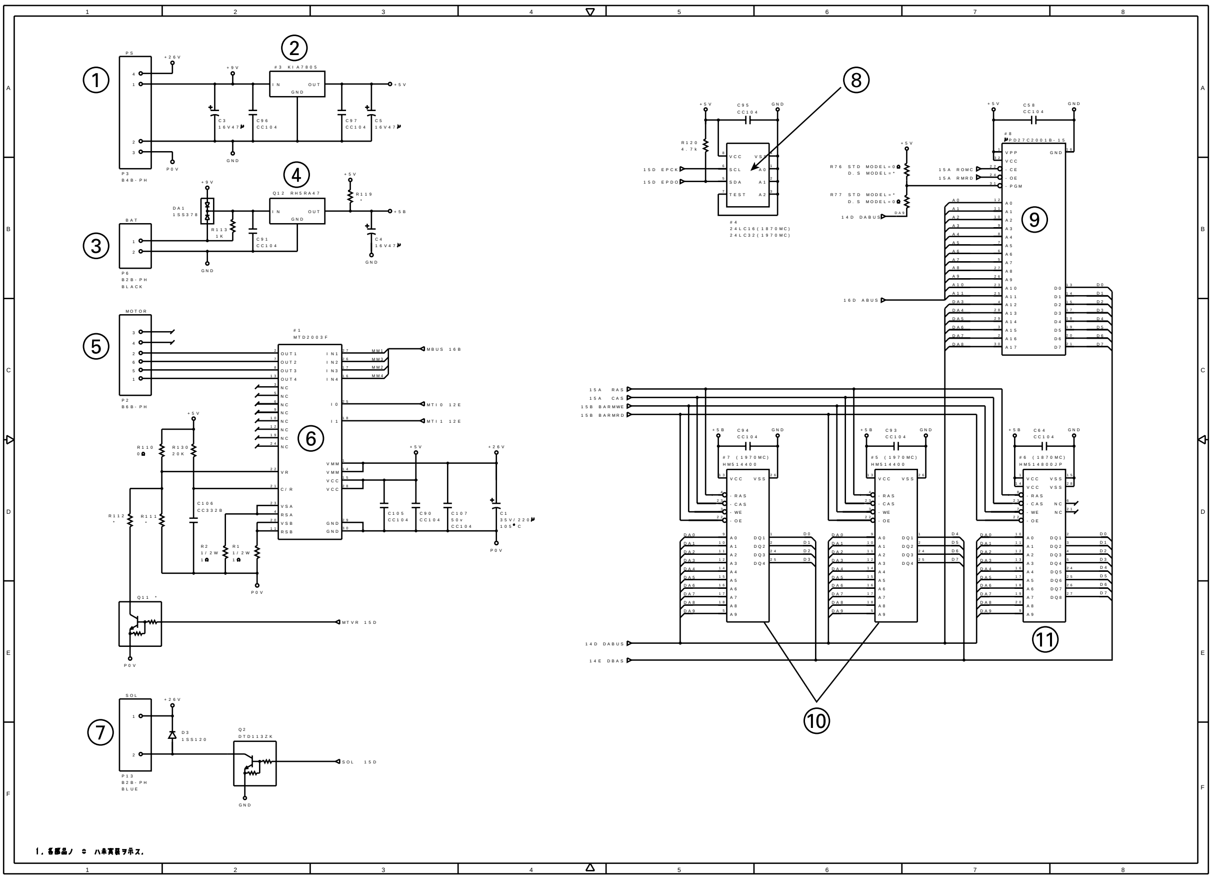
⑦ Recording head drive voltage detector

⑧ Inverters

⑨ Connector for the modular PCB

⑩ Connector for the hook switch PCB

⑪ Backup circuit for the calendar clock



Main PCB Circuit Diagram 2/5

① Connector for the power supply PCB which supplies 25V and 8V.

② 3-terminal regulator which eliminates unstabilized components of the +8V source to generate stabilized +5V source.

③ Connector for the Ni-MH battery which supplies approx. 5V.
(Provided on the FAX1570MC/1030/MFC1870MC/1970MC)

④ 3-terminal regulator which generates +5B source from +8V to back up the DRAM (that stores received data).
(Provided on the FAX1570MC/1030/MFC1870MC/1970MC)

⑤ Connector for the motor

⑥ Motor driver

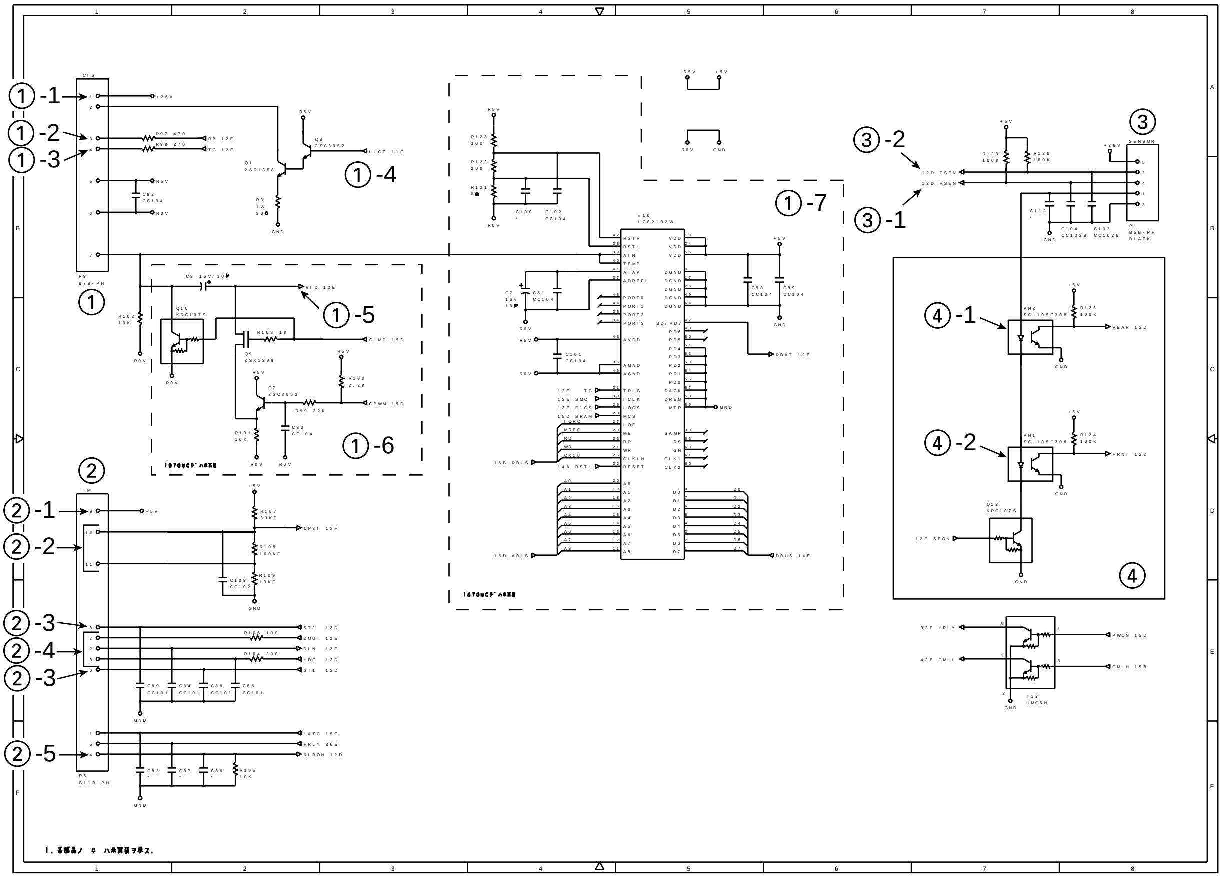
⑦ Connector for the clutch solenoid (that switches the power transmission).

⑧ E^{2}PROM (32-kilobit for the FAX1570MC/1030/MFC1970MC, 16-kilobit for other models.)

⑨ ROM (2-megabit. Note that the qualification machines for demonstration have a 4-megabit ROM.)

⑩ DRAMs (1-megabyte, two 4-megabit chips) provided on the FAX1570MC/1030/MFC1970MC.

⑪ DRAM (512-kilobyte) provided on the MFC1870MC. The FAX1170/1270/1010/1020/MFC1770 has its equivalent DRAM on location #7.



Main PCB Circuit Diagram 3/5

① Connector for the CIS

- ①-1: Power for the CIS LED array
- ①-2: Clock output
- ①-3: Trigger signal output. One shot of this signal triggers a line of scan.
- ①-4 LED control signal output circuit which controls the intensity of the CIS LED array.
- ①-5: Input of video data (VID) to the FAX engine
- ①-6: Clamp circuitry that gives the bias level to the amplifier of the VID input circuit according to the CLMP and CPWM signals issued by the CPU (that monitors the current video data input) for compensating the DC component of video signals for the next scan line.

  Working with the FAX engine, this circuitry carries out the standard scanning. (This circuitry is provided on the FAX1170/1270/1010/1020/MFC1770/1870MC.)
- ①-7 SANYO LSI that carries out the high-quality scanning. (Provided on the FAX1570MC/1030/MFC1970MC)

② Connector for the thermal recording head

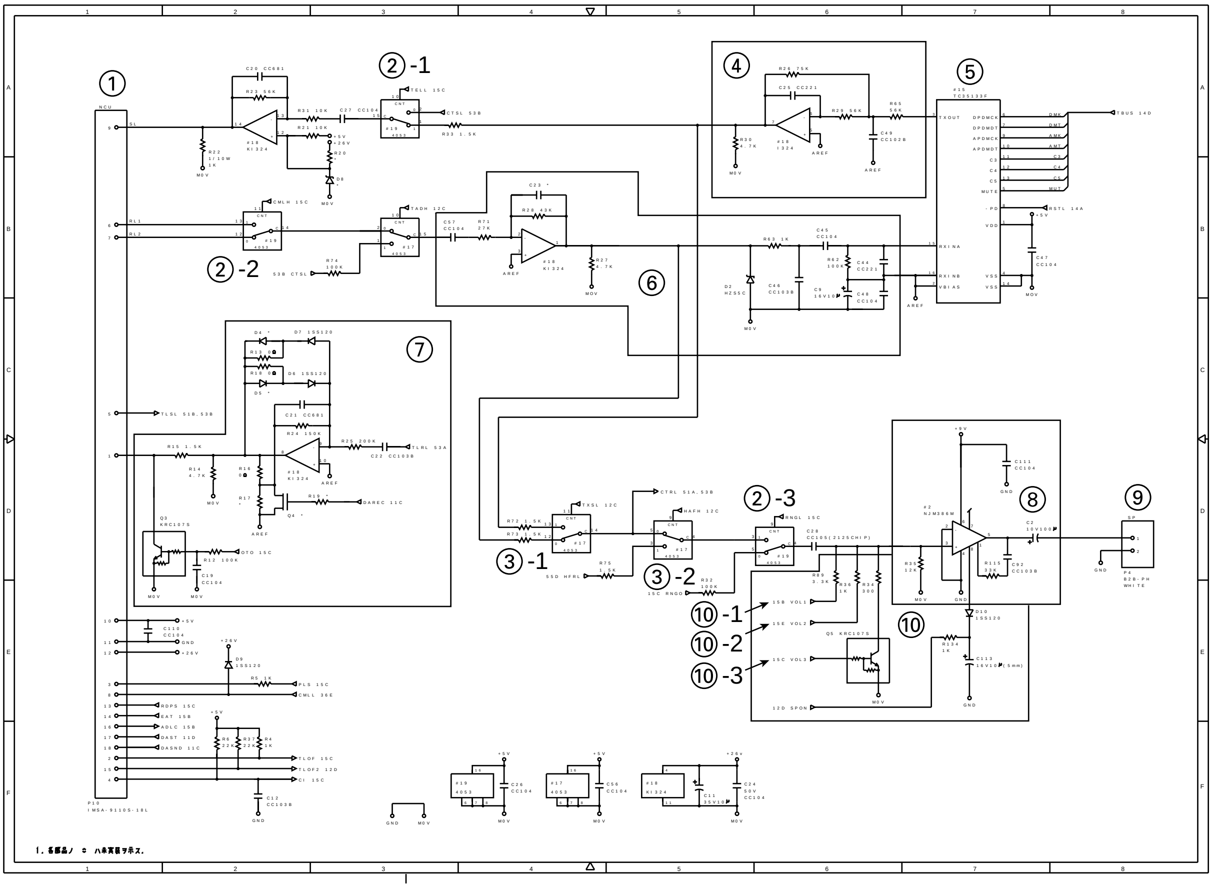
- ②-1: Power 5V for the thermal recording head
- ②-2: Thermister signals which are normalized by the resistor network and fed to the FAX engine
- ②-3: Strobe signals
- ②-4: Data signals
- ②-5: Ribbon sensor signal

③ Connector for the sensor PCB

- ③-1: Paper-edge sensor signal
- ③-2: Paper ejection sensor signal

④ Document front and rear sensor circuitry that is active only while the SEON signal is on.

- ④-1:PH2, document rear sensor
- ④-2:PH1, document front sensor



Main PCB Circuit Diagram 4/5

① Connector for the NCU

② Analog signal selectors

  ②-1: Selects either input signals from the handset or those from the MODEM.

  ②-2: Selects either RL1 or RL2 signals inputted from the communications network.

  ②-3: Selects either sound signals (e.g., alarm beeps, key clicks and ringer sounds) generated by the FAX engine or signals selected by ②-2.

③ Voice switching analog selectors

  ③-1: Switches between the output line and input line for monitoring. When switched to the output line, this selector allows FAX sending operation to be monitored; when switched to the input line, it allows received voices to be monitored.

  ③-2: Selects either voice signals inputted from the communications network or recorded voice signals inputted from the microphone or handset through the MODEM.

④ Amplifier circuit for signals outputted from the MODEM.

⑤ Analog front end IC which processes the analog I/O signals from/to the MODEM.

⑥ Amplifier & shaper circuit for signals inputted from the communications network.

⑦ Telephone circuit for transmitting signals.

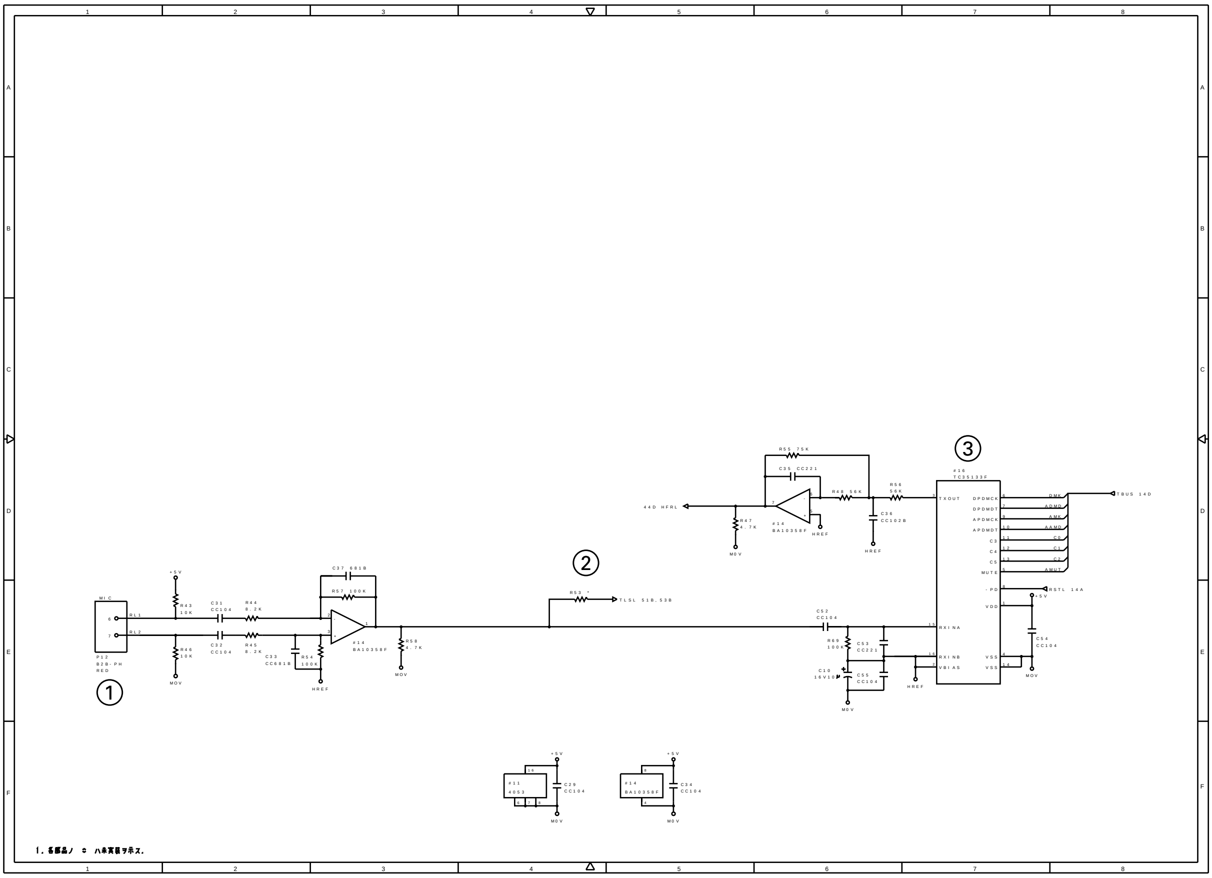
⑧ Speaker amplifier circuit which amplifies sounds issued from the above analog signal selector ②-3 and feeds them to the speaker.

⑨ Connector for the speaker

⑩ Speaker volume control circuit

⑩-1: VOL1	OFF	ON	ON
⑩-2: VOL2	OFF	OFF	ON
⑩-3: VOL3	OFF	OFF	ON
Speaker volume	High	Medium	Low

(ON: Closed OFF: Opened)


MIC
6
7
RL1
RL2
P12
B2B-PH
RED
①
+5V
R43
10K
R46
10K
MOV
C31
CC104
C32
CC104
R44
8.2K
R45
8.2K
C33
CC681B
R54
100K
HREF
C37 681B
R57 100K
#14
BA10358F
R58
4.7K
②
R53 *
TLSL 51B, 53B
R55 75K
C35 CC221
44D HFRL
R47
4.7K
M0V
#14
BA10358F
HREF
R48 56K
R56
56K
C36
CC102B
③
#16
TC35133F
TXOUT
DPDMCK
DPDMDT
APDMCK
APDMDT
C3
C4
C5
MUTE
-PD
VDD
RXINA
RXINB
VBIAS
VSS
VSS
DMK
ADMD
AMK
AAMD
C0
C1
C2
AMUT
TBUS 14D
RSTL 14A
C54
CC104
C52
CC104
R69
100K
C53
CC221
C10
16V10μ
C55
CC104
#11
4053
C29
CC104
#14
BA10358F
C34
CC104
1. 各部品ノ * ハ未実装ヲ示ス.

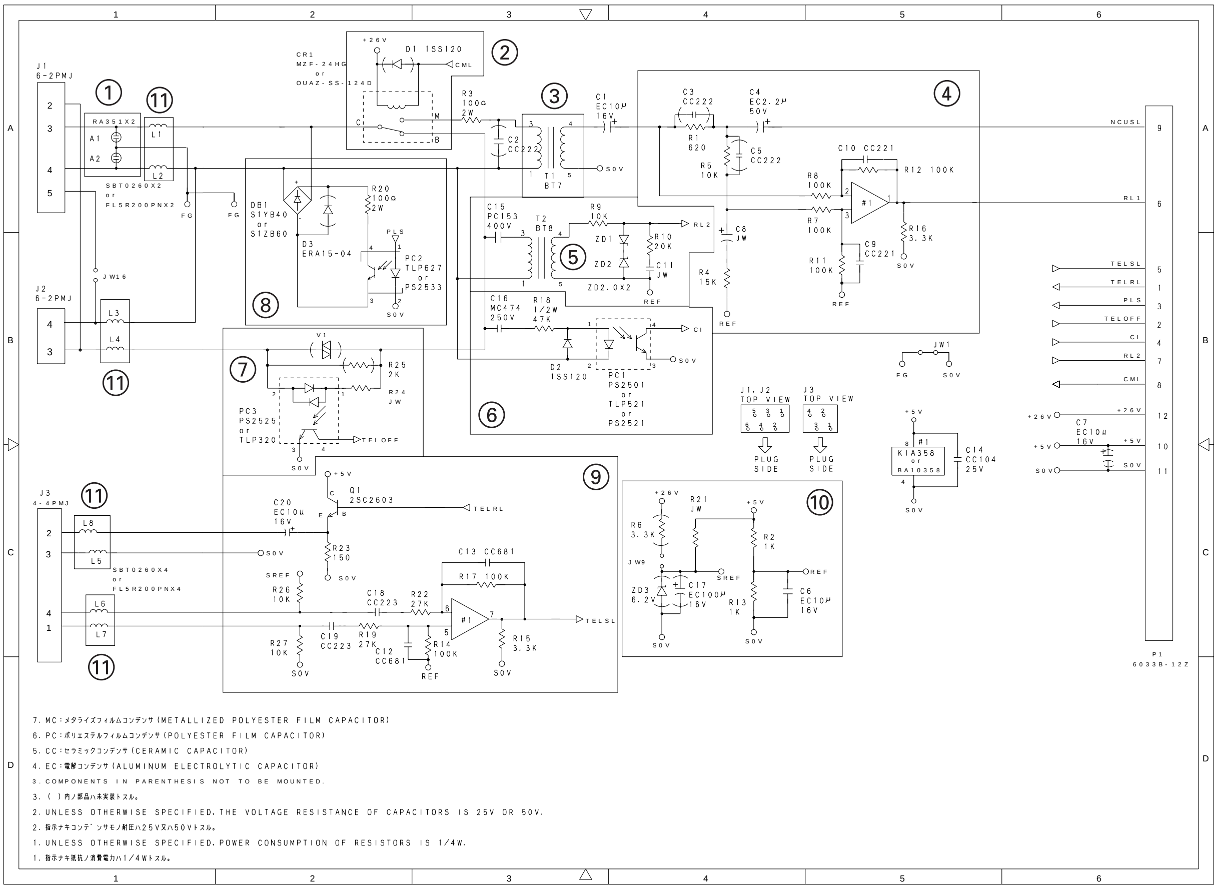
Main PCB Circuit Diagram 5/5

① Connector for the microphone
② Voice signal amplifier circuit
③ Analog portion of MODEM

These are provided on the FAX1570MC/1030/MFC1870MC/1970MC.

3.3 NCU PCB

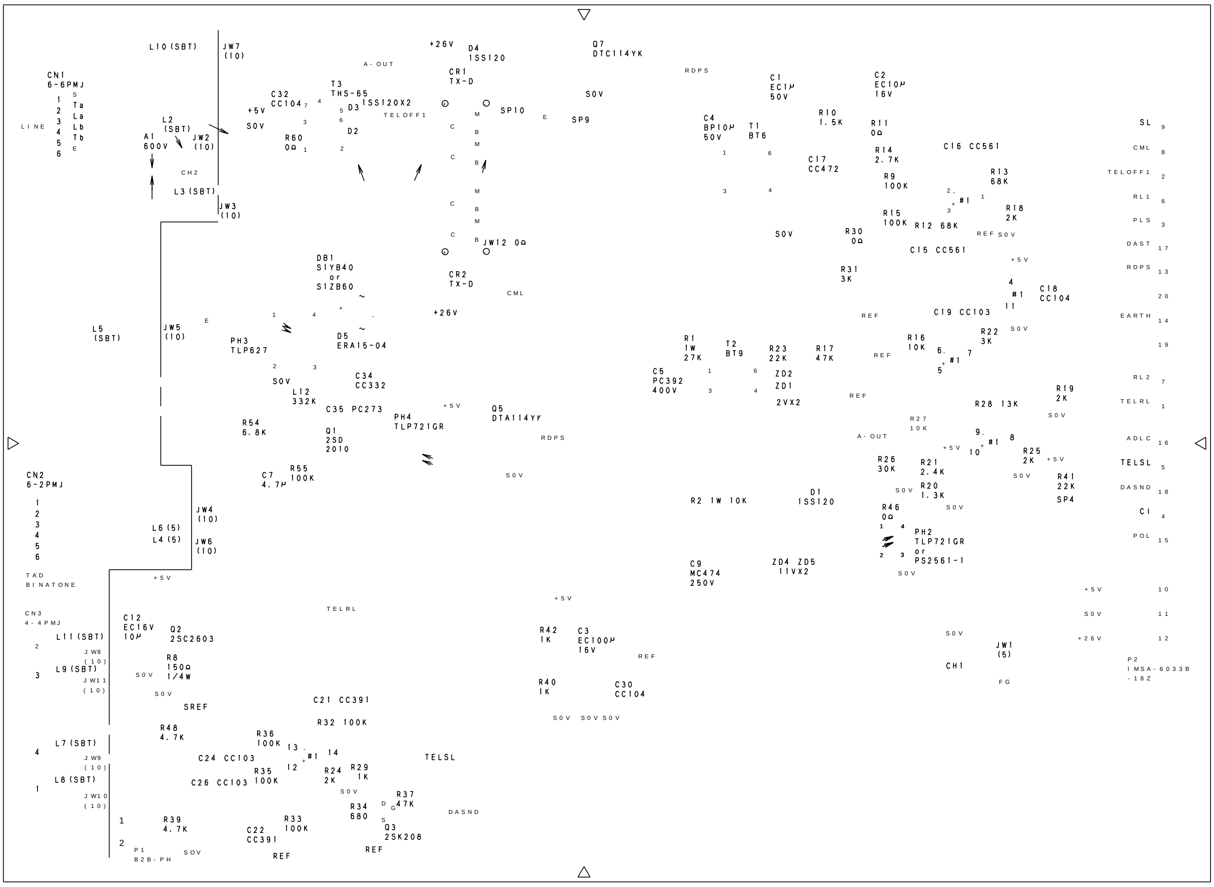
The NCU PCB switches the communications line to telephone or built-in MODEM, under the control of the main PCB.


1
2
3
4
5
6
A
B
C
D
J1
6-2PMJ
①
⑪
RA351X2
A1
A2
L1
L2
SBT0260X2
or
FL5R200PNX2
FG
FG
JW16
J2
6-2PMJ
L3
L4
CR1
MZF-24HG
or
OUAZ-SS-124D
+26V
D1 1SS120
CML
②
C
M
B
R3
100Ω
2W
C2
CC222
③
T1
BT7
C1
EC10μ
16V
S0V
DB1
S1YB40
or
S1ZB60
R20
100Ω
2W
D3
ERA15-04
PLS
PC2
TLP627
or
PS2533
⑧
C15
PC153
400V
T2
BT8
⑤
R9
10K
ZD1
ZD2
ZD2.0X2
R10
20K
C11
JW
RL2
REF
C16
MC474
250V
R18
1/2W
47K
D2
1SS120
PC1
PS2501
or
TLP521
or
PS2521
CI
⑥
V1
⑦
R25
2K
R24
JW
PC3
PS2525
or
TLP320
TELOFF
④
C3
CC222
R1
620
C4
EC2.2μ
50V
C5
CC222
R5
10K
C10 CC221
R12 100K
R8
100K
R7
100K
#1
R16
3.3K
C8
JW
R4
15K
R11
100K
C9
CC221
NCUSL
RL1
TELSL
TELRL
PLS
TELOFF
CI
RL2
CML
+26V
+5V
S0V
C7
EC10μ
16V
JW1
FG
J1, J2
TOP VIEW
J3
TOP VIEW
PLUG
SIDE
KIA358
or
BA10358
C14
CC104
25V
P1
6033B-12Z
J3
4-4PMJ
L8
L5
L6
L7
SBT0260X4
or
FL5R200PNX4
⑨
Q1
2SC2603
C20
EC10μ
16V
R23
150
SREF
R26
10K
C13 CC681
R17 100K
C18
CC223
R22
27K
R27
10K
C19
CC223
R19
27K
C12
CC681
R14
100K
R15
3.3K
⑩
R6
3.3K
R21
JW
R2
1K
JW9
ZD3
6.2V
C17
EC100μ
16V
R13
1K
C6
EC10μ
16V

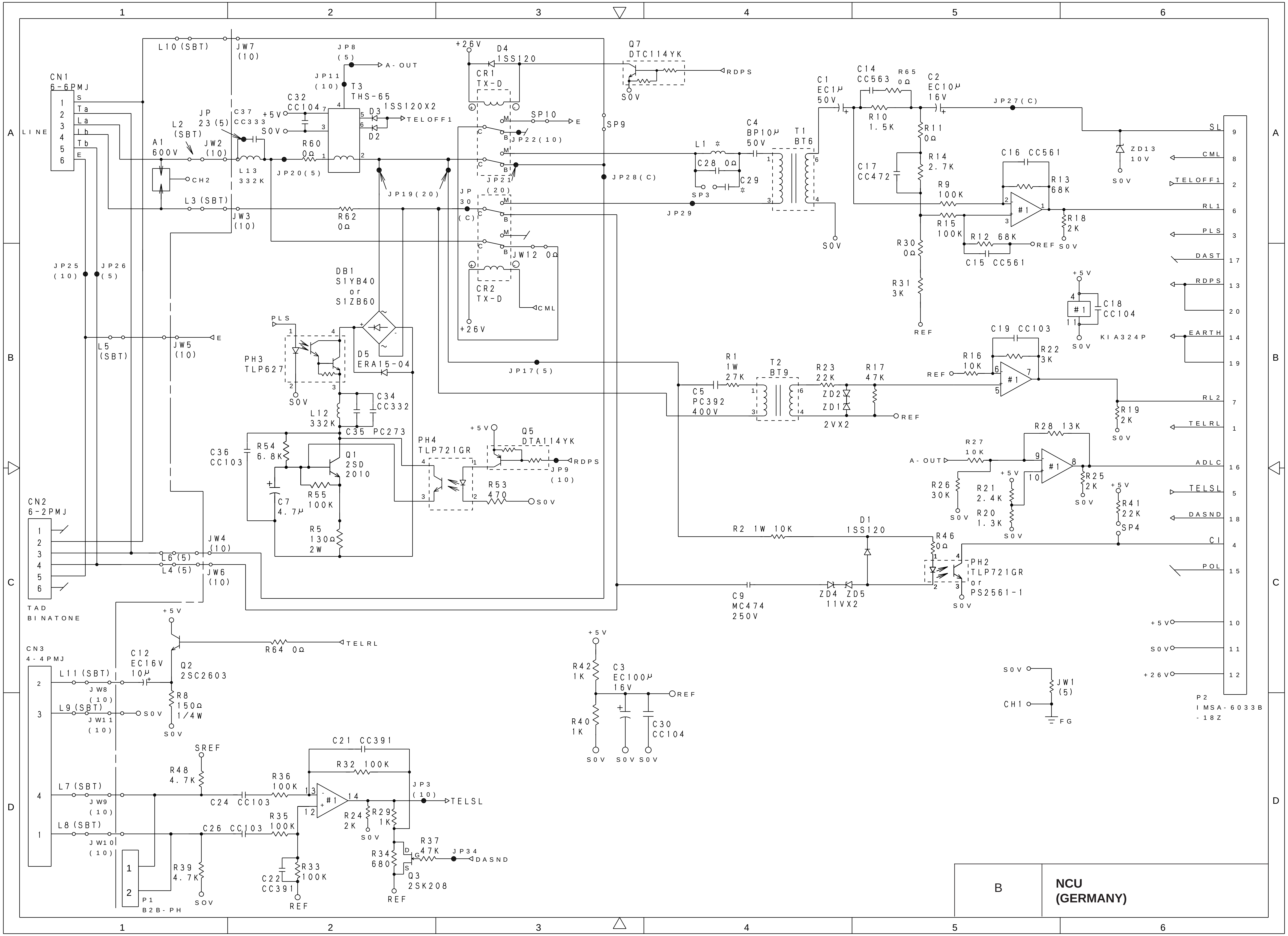
7. MC：メタライズフィルムコンデンサ（METALLIZED POLYESTER FILM CAPACITOR）
6. PC：ポリエステルフィルムコンデンサ（POLYESTER FILM CAPACITOR）
5. CC：セラミックコンデンサ（CERAMIC CAPACITOR）
4. EC：電解コンデンサ（ALUMINUM ELECTROLYTIC CAPACITOR）
3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.
3. （ ）内ノ部品ハ未実装トスル。
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.
2. 指示ナキコンデ゛ンサモノ耐圧ハ25V又ハ50Vトスル。
1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.
1. 指示ナキ抵抗ノ消費電力ハ1/4Wトスル。

NCU PCB Circuit Diagram (U.S.A. versions)

① Surge absorbers
② Line relay (CML relay)
③ Line transformer
④ Circuit related to the line transformer
⑤ High-impedance transformer circuit
⑥ Calling signal detector
⑦ Loop current detector
⑧ Dial pulse generator
⑨ Telephone circuit
⑩ Reference voltage generation circuit for the operational amplifiers in ④ and ⑨
⑪ Noise filters (provided on the FAX1570MC/MFC1870MC/1970MC)

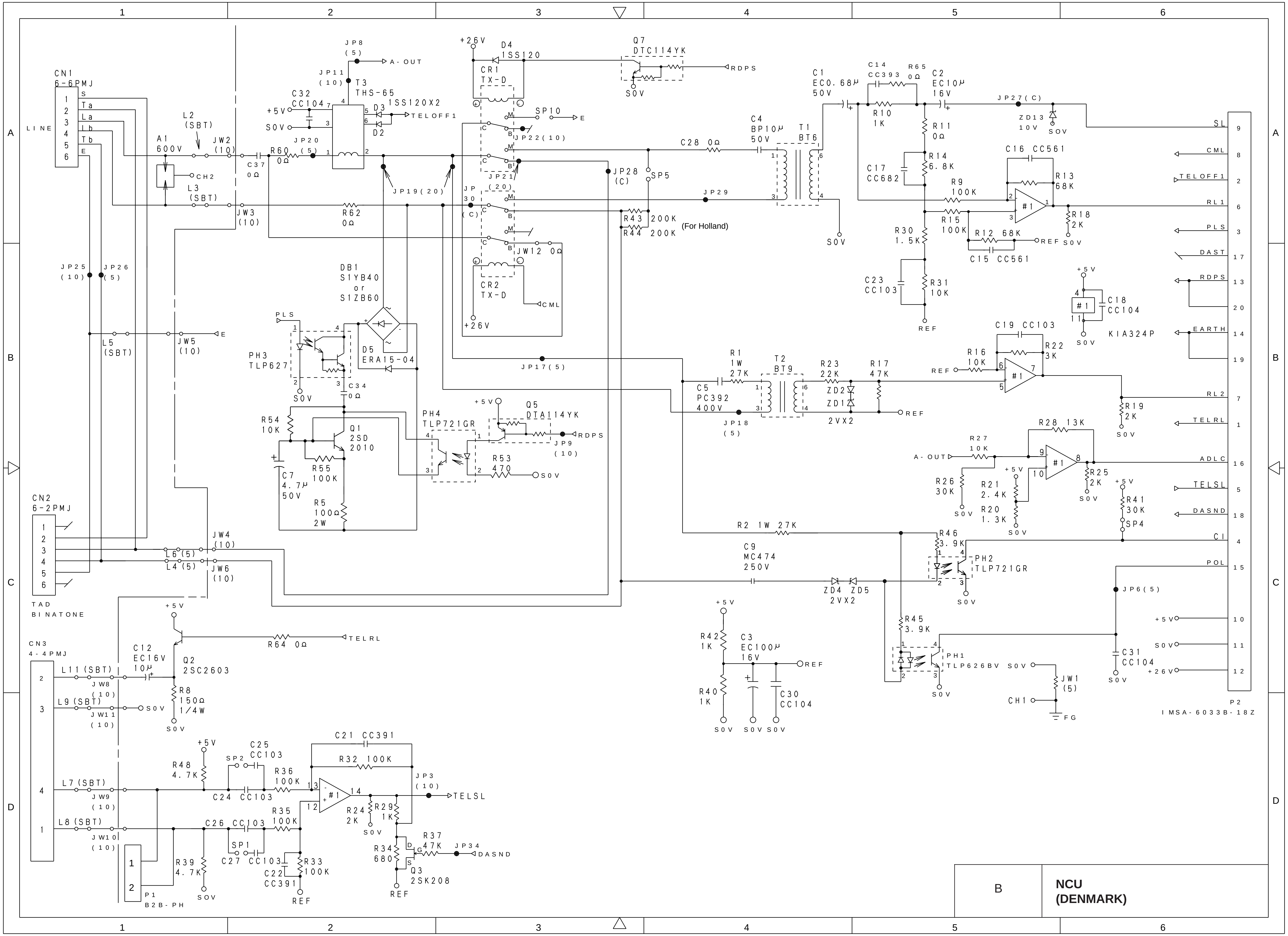


L10 (SBT)
JW7 (10)
+26V
D4 1SS120
Q7 DTC114YK
CN1 6-6PMJ
LINE
A-OUT
CR1 TX-D
RDPS
C1 EC1μ 50V
C2 EC10μ 16V
C32 CC104
T3 THS-65
D3 1SS120X2
SP10
S0V
+5V
S0V
TELOFF1
SP9
L2 (SBT)
A1 600V
JW2 (10)
R60 0Ω
D2
C4 BP10μ 50V
T1 BT6
R10 1.5K
R11 0Ω
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
R14 2.7K
R9 100K
C16 CC561
C17 CC472
R13 68K
R18 2K
R15 100K
R12 68K
CH2
L3 (SBT)
JW3 (10)
JW12 0Ω
R30 0Ω
C15 CC561
DB1 S1YB40 or S1ZB60
CR2 TX-D
CML
R31 3K
C18 CC104
+26V
C19 CC103
L5 (SBT)
JW5 (10)
PH3 TLP627
D5 ERA15-04
R1 1W 27K
T2 BT9
R23 22K
R17 47K
R16 10K
R22 3K
C5 PC392 400V
ZD2
ZD1
2VX2
C34 CC332
L12 332K
C35 PC273
Q5 DTA114YF
PH4 TLP721GR
R28 13K
R19 2K
R54 6.8K
Q1 2SD 2010
R27 10K
R26 30K
R21 2.4K
R25 2K
R41 22K
SP4
CN2 6-2PMJ
C7 4.7μ
R55 100K
R2 1W 10K
D1 1SS120
R20 1.3K
R46 0Ω
PH2 TLP721GR or PS2561-1
L6 (5)
L4 (5)
JW4 (10)
JW6 (10)
TAD
BINATONE
C9 MC474 250V
ZD4 ZD5 11VX2
CN3 4-4PMJ
C12 EC16V 10μ
Q2 2SC2603
TELRL
R42 1K
C3 EC100μ 16V
L11 (SBT)
L9 (SBT)
JW8 (10)
JW11 (10)
R8 150Ω 1/4W
SREF
R40 1K
C30 CC104
CH1
JW1 (5)
FG
P2 IMSA-6033B-18Z
C21 CC391
R32 100K
R48 4.7K
R36 100K
L7 (SBT)
L8 (SBT)
JW9 (10)
JW10 (10)
C24 CC103
C26 CC103
R35 100K
R24 2K
R29 1K
TELSL
R34 680
R37 47K
Q3 2SK208
DASND
R39 4.7K
C22 CC391
R33 100K
P1 B2B-PH
REF


CN1
6-6PMJ
LINE
S
Ta
La
Lb
Tb
E
L10 (SBT)
JW7 (10)
JP8 (5)
A-OUT
JP11 (10)
T3
THS-65
C32
CC104
+5V
S0V
C37
CC333
JP 23 (5)
L2 (SBT)
A1 600V
JW2 (10)
CH2
L13 332K
JP20 (5)
R60 0Ω
D3
1SS120X2
D2
TELOFF1
+26V
D4
1SS120
CR1
TX-D
SP10
E
JP22 (10)
JP21 (20)
SP9
JP28 (C)
JP19 (20)
JP 30 (C)
L3 (SBT)
JW3 (10)
R62 0Ω
JW12 0Ω
CR2
TX-D
CML
+26V
Q7
DTC114YK
RDPS
S0V
C1
EC1μ
50V
C14
CC563
R65 0Ω
C2
EC10μ
16V
JP27 (C)
R10
1.5K
R11 0Ω
R14 2.7K
C17
CC472
C16 CC561
R13 68K
R9 100K
R15 100K
R12 68K
REF
C15 CC561
R18 2K
R30 0Ω
R31 3K
REF
ZD13 10V
S0V
C4
BP10μ
50V
T1
BT6
L1 ※
C28 0Ω
C29 ※
SP3
JP29
S0V
JP25 (10)
JP26 (5)
DB1
S1YB40
or
S1ZB60
PLS
PH3
TLP627
D5
ERA15-04
L5 (SBT)
JW5 (10)
E
JP17 (5)
L12 332K
C34 CC332
C35 PC273
C36 CC103
R54 6.8K
Q1 2SD 2010
C7 4.7μ
R55 100K
R5 130Ω 2W
PH4
TLP721GR
+5V
Q5
DTA114YK
JP9 (10)
R53 470
S0V
+5V
C18
CC104
#1
KIA324P
C19 CC103
R16 10K
R22 3K
R1 1W 27K
T2 BT9
R23 22K
R17 47K
ZD2
ZD1
2VX2
C5
PC392
400V
REF
R19 2K
R28 13K
R27 10K
A-OUT
R26 30K
R21 2.4K
R20 1.3K
R25 2K
R41 22K
SP4
R2 1W 10K
D1 1SS120
R46 0Ω
PH2
TLP721GR
or
PS2561-1
C9
MC474
250V
ZD4 ZD5
11VX2
CN2
6-2PMJ
TAD
BINATONE
JW4 (10)
6 (5)
L4 (5)
JW6 (10)
CN3
4-4PMJ
L11 (SBT)
JW8 (10)
C12 EC16V 10μ
Q2 2SC2603
R64 0Ω
TELRL
R8 150Ω 1/4W
L9 (SBT)
JW11 (10)
L7 (SBT)
JW9 (10)
L8 (SBT)
JW10 (10)
SREF
R48 4.7K
C24 CC103
R36 100K
C21 CC391
R32 100K
JP3 (10)
TELSL
C26 CC103
R35 100K
R24 2K
R29 1K
R37 47K
JP34
DASND
R34 680
Q3 2SK208
R39 4.7K
C22 CC391
R33 100K
P1 B2B-PH
R42 1K
C3 EC100μ 16V
R40 1K
C30 CC104
JW1 (5)
CH1
FG
P2
IMSA-6033B-18Z
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
+5V
S0V
+26V

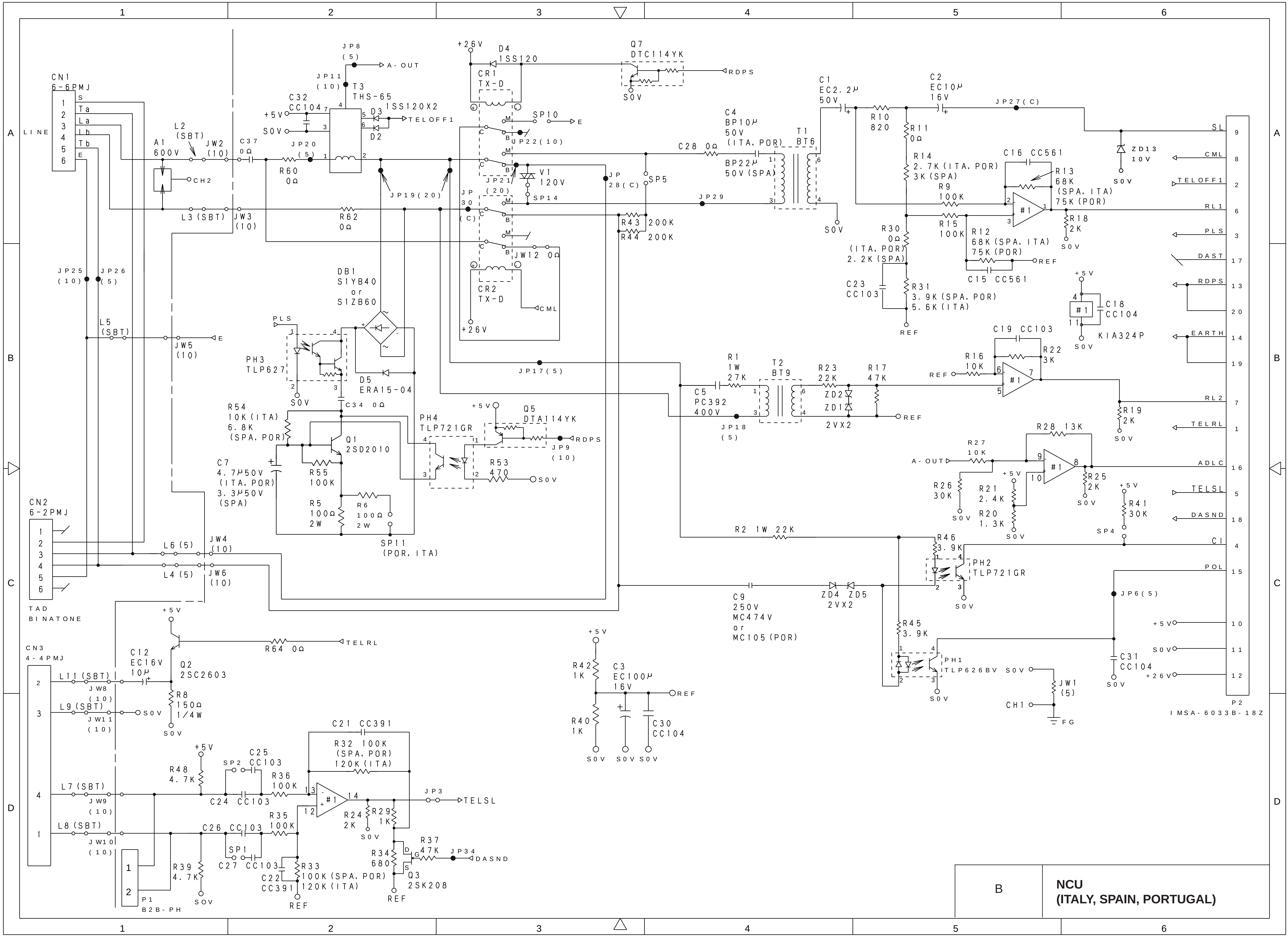
B

NCU
(GERMANY)


1
2
3
4
5
6
A
B
C
D
CN1
6-6PMJ
LINE
S
Ta
La
Lb
Tb
E
A1
600V
CH2
L2
(SBT)
L3
(SBT)
JW2
(10)
JW3
(10)
C37
0Ω
R60
0Ω
JP20
(5)
C32
CC104
+5V
S0V
JP8
(5)
A-OUT
JP11
(10)
T3
THS-65
D3
1SS120X2
D2
TELOFF1
JP19(20)
R62
0Ω
+26V
D4
1SS120
CR1
TX-D
SP10
E
JP22(10)
JP21
(20)
JP
30
(C)
JP28
(C)
SP5
R43
R44
200K
200K
(For Holland)
JW12 0Ω
CR2
TX-D
CML
+26V
Q7
DTC114YK
RDPS
S0V
C28 0Ω
C4
BP10μ
50V
T1
BT6
JP29
S0V
C1
EC0.68μ
50V
C14
CC393
R65
0Ω
C2
EC10μ
16V
JP27(C)
R10
1K
R11
0Ω
ZD13
10V
S0V
C17
CC682
R14
6.8K
C16 CC561
R13
68K
R9
100K
#1
R15
100K
R18
2K
R30
1.5K
R12 68K
C15 CC561
REF
S0V
C23
CC103
R31
10K
REF
+5V
#1
C18
CC104
KIA324P
S0V
JP25
(10)
JP26
(5)
L5
(SBT)
JW5
(10)
E
DB1
S1YB40
or
S1ZB60
PLS
PH3
TLP627
D5
ERA15-04
S0V
C34
0Ω
JP17(5)
R1
1W
27K
T2
BT9
C5
PC392
400V
JP18
(5)
R23
22K
ZD2
ZD1
2VX2
R17
47K
REF
R16
10K
C19 CC103
R22
3K
R19
2K
S0V
R54
10K
Q1
2SD
2010
C7
4.7μ
50V
R55
100K
R5
100Ω
2W
PH4
TLP721GR
+5V
Q5
DTA114YK
RDPS
JP9
(10)
R53
470
S0V
R28 13K
R27
10K
A-OUT
R26
30K
R21
2.4K
R20
1.3K
R25
2K
+5V
R41
30K
SP4
CN2
6-2PMJ
TAD
BINATONE
JW4
(10)
L6(5)
L4(5)
JW6
(10)
R2 1W 27K
R46
3.9K
PH2
TLP721GR
C9
MC474
250V
ZD4
ZD5
2VX2
JP6(5)
+5V
R42
1K
C3
EC100μ
16V
REF
R40
1K
C30
CC104
R45
3.9K
PH1
TLP626BV
JW1
(5)
CH1
FG
C31
CC104
CN3
4-4PMJ
+5V
Q2
2SC2603
R64 0Ω
TELRL
L11(SBT)
JW8
(10)
C12
EC16V
10μ
R8
150Ω
1/4W
L9(SBT)
JW11
(10)
R48
4.7K
SP2
C25
CC103
C21 CC391
R32 100K
R36
100K
JP3
(10)
TELSL
L7(SBT)
JW9
(10)
C24 CC103
R24
2K
R29
1K
L8(SBT)
JW10
(10)
C26 CC103
R35
100K
SP1
C27 CC103
R33
100K
C22
CC391
R34
680
R37
47K
JP34
DASND
Q3
2SK208
REF
R39
4.7K
P1
B2B-PH
S0V
P2
IMSA-6033B-18Z
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
+5V
S0V
+26V

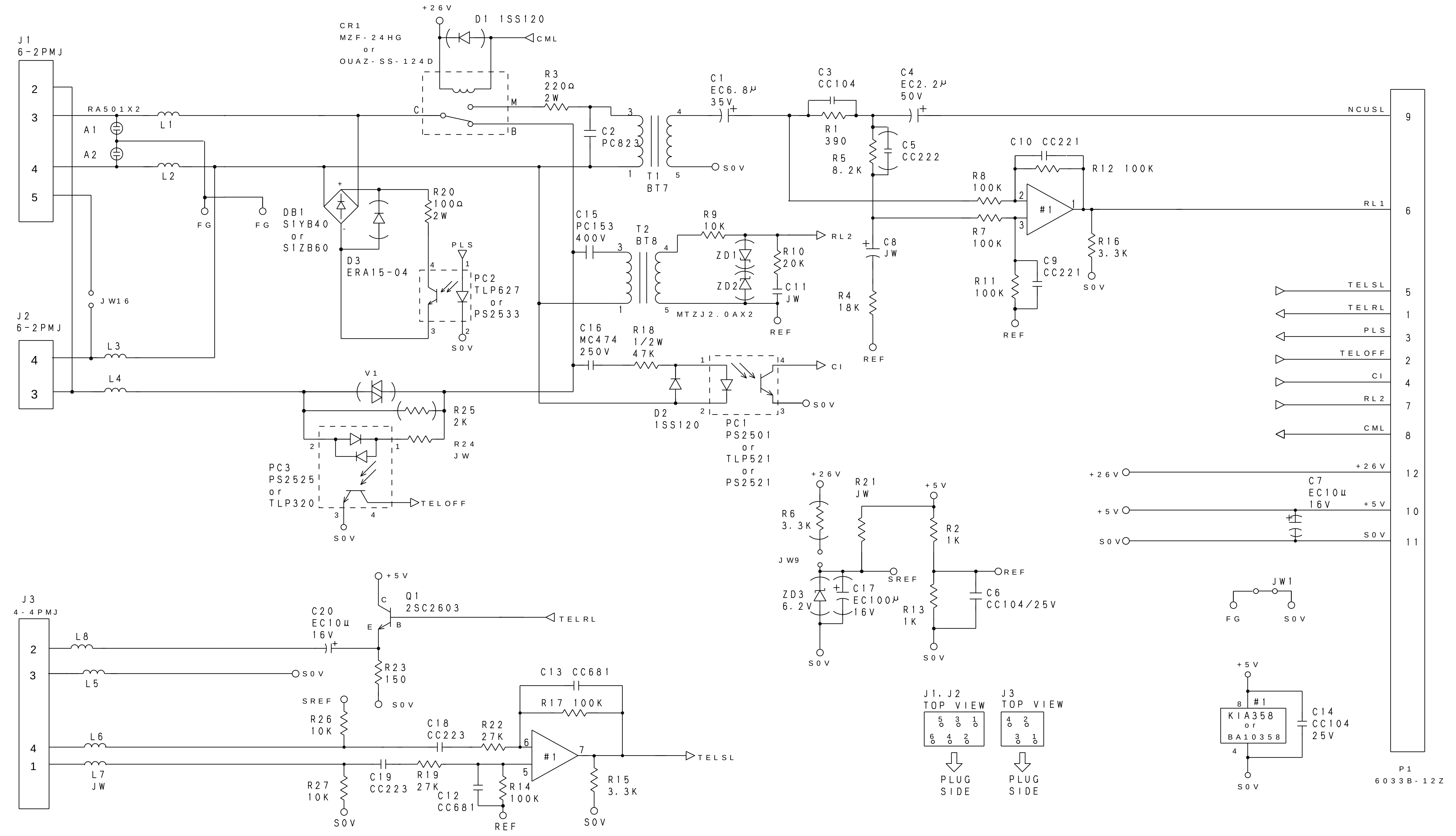
B

NCU (DENMARK)


1
2
3
4
5
6
A
B
C
D
CN1
6-6PMJ
LINE
S
Ta
La
Lb
Tb
E
A1
600V
L2
(SBT)
JW2
(10)
C37
0Ω
CH2
L3 (SBT)
JW3
(10)
JP25
(10)
JP26
(5)
L5
(SBT)
JW5
(10)
E
JP8
(5)
A-OUT
JP11
(10)
T3
THS-65
C32
CC104
+5V
S0V
JP20
(5)
R60
0Ω
D3
1SS120X2
D2
TELOFF1
R62
0Ω
JP19 (20)
+26V
D4
1SS120
CR1
TX-D
SP10
E
JP22 (10)
JP21
(20)
V1
120V
SP14
JP
30
(C)
JP
28 (C)
JW12 0Ω
CR2
TX-D
CML
+26V
Q7
DTC114YK
RDPS
S0V
C4
BP10μ
50V
(ITA, POR)
BP22μ
50V (SPA)
C28 0Ω
SP5
T1
BT6
JP29
R43 200K
R44 200K
S0V
C1
EC2.2μ
50V
R10
820
C2
EC10μ
16V
JP27 (C)
R11
0Ω
R14
2.7K (ITA, POR)
3K (SPA)
C16 CC561
R13
68K
(SPA, ITA)
75K (POR)
R9
100K
#1
R18
2K
S0V
R15
100K
R12
68K (SPA, ITA)
75K (POR)
REF
C15 CC561
R30
0Ω
(ITA, POR)
2.2K (SPA)
C23
CC103
R31
3.9K (SPA, POR)
5.6K (ITA)
REF
ZD13
10V
S0V
+5V
C18
CC104
KIA324P
S0V
DB1
S1YB40
or
S1ZB60
PLS
PH3
TLP627
S0V
D5
ERA15-04
C34 0Ω
R54
10K (ITA)
6.8K
(SPA, POR)
Q1
2SD2010
C7
4.7μ50V
(ITA, POR)
3.3μ50V
(SPA)
R55
100K
R5
100Ω
2W
R6
100Ω
2W
SP11
(POR, ITA)
PH4
TLP721GR
+5V
Q5
DTA114YK
RDPS
JP9
(10)
R53
470
S0V
JP17 (5)
R1
1W
27K
T2
BT9
R23
22K
R17
47K
C5
PC392
400V
JP18
(5)
ZD2
ZD1
2VX2
REF
C19 CC103
R22
3K
R16
10K
REF
#1
R19
2K
S0V
R27
10K
A-OUT
R28 13K
#1
R26
30K
S0V
R21
2.4K
R20
1.3K
S0V
+5V
R25
2K
S0V
+5V
R41
30K
SP4
R2 1W 22K
R46
3.9K
PH2
TLP721GR
S0V
C9
250V
MC474V
or
MC105 (POR)
ZD4 ZD5
2VX2
JP6 (5)
R45
3.9K
PH1
TLP626BV
S0V
S0V
JW1
(5)
CH1
FG
C31
CC104
S0V
P2
IMSA-6033B-18Z
SL
CML
TELOFF1
RL1
PLS
DAST
RDPS
EARTH
RL2
TELRL
ADLC
TELSL
DASND
CI
POL
+5V
S0V
+26V
9
8
2
6
3
17
13
20
14
19
7
1
16
5
18
4
15
10
11
12
CN2
6-2PMJ
TAD
BINATONE
L6 (5)
JW4
(10)
L4 (5)
JW6
(10)
CN3
4-4PMJ
+5V
Q2
2SC2603
R64 0Ω
TELRL
C12
EC16V
10μ
L11 (SBT)
JW8
(10)
R8
150Ω
1/4W
S0V
L9 (SBT)
JW11
(10)
S0V
L7 (SBT)
JW9
(10)
L8 (SBT)
JW10
(10)
P1
B2B-PH
+5V
R48
4.7K
SP2
C25
CC103
C24 CC103
R36
100K
C21 CC391
R32 100K
(SPA, POR)
120K (ITA)
#1
JP3
TELSL
R24
2K
S0V
R29
1K
C26 CC103
R35
100K
SP1
C27 CC103
C22
CC391
R33
100K (SPA, POR)
120K (ITA)
REF
R39
4.7K
S0V
R34
680
R37
47K
Q3
2SK208
JP34
DASND
REF
+5V
R42
1K
C3
EC100μ
16V
REF
R40
1K
C30
CC104
S0V
S0V
S0V

B

NCU
(ITALY, SPAIN, PORTUGAL)


J1
6-2PMJ
2
3
4
5
RA501X2
A1
A2
L1
L2
FG
FG
JW16
J2
6-2PMJ
4
3
L3
L4
CR1
MZF-24HG
or
OUAZ-SS-124D
+26V
D1 1SS120
CML
CI
M
B
R3
220Ω
2W
C2
PC823
DB1
S1YB40
or
S1ZB60
D3
ERA15-04
R20
100Ω
2W
PLS
PC2
TLP627
or
PS2533
S0V
V1
R25
2K
R24
JW
PC3
PS2525
or
TLP320
TELOFF
S0V
C1
EC6.8μ
35V
T1
BT7
S0V
C15
PC153
400V
T2
BT8
R9
10K
ZD1
ZD2
MTZJ2.0AX2
R10
20K
C11
JW
REF
RL2
C16
MC474
250V
R18
1/2W
47K
D2
1SS120
PC1
PS2501
or
TLP521
or
PS2521
CI
S0V
C3
CC104
R1
390
R5
8.2K
C5
CC222
C8
JW
R4
18K
REF
C4
EC2.2μ
50V
C10 CC221
R12 100K
R8
100K
R7
100K
#1
R16
3.3K
S0V
R11
100K
C9
CC221
REF
NCUSL
RL1
TELSL
TELRL
PLS
TELOFF
CI
RL2
CML
+26V
+5V
S0V
C7
EC10μ
16V
P1
6033B-12Z
9
6
5
1
3
2
4
7
8
12
10
11
+26V
R6
3.3K
JW9
ZD3
6.2V
C17
EC100μ
16V
S0V
R21
JW
SREF
+5V
R2
1K
REF
R13
1K
C6
CC104/25V
S0V
JW1
FG
S0V
+5V
#1
KIA358
or
BA10358
C14
CC104
25V
S0V
J1, J2
TOP VIEW
5 3 1
6 4 2
PLUG
SIDE
J3
TOP VIEW
4 2
3 1
PLUG
SIDE
J3
4-4PMJ
2
3
4
1
L8
L5
L6
L7
JW
+5V
Q1
2SC2603
TELRL
C20
EC10μ
16V
R23
150
S0V
S0V
C13 CC681
R17 100K
SREF
R26
10K
C18
CC223
R22
27K
#1
TELSL
R27
10K
S0V
C19
CC223
R19
27K
C12
CC681
R14
100K
REF
R15
3.3K
S0V

7. MC:メタライズフィルムコンデンサ(METALLIZED POLYESTER FILM CAPACITOR)

6. PC:ポリエステルフィルムコンデンサ(POLYESTER FILM CAPACITOR)

5. CC:セラミックコンデンサ(CERAMIC CAPACITOR)

4. EC:電解コンデンサ(ALUMINUM ELECTROLYTIC CAPACITOR)

3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.

3. ( )内ノ部品ハ未実装トスル。

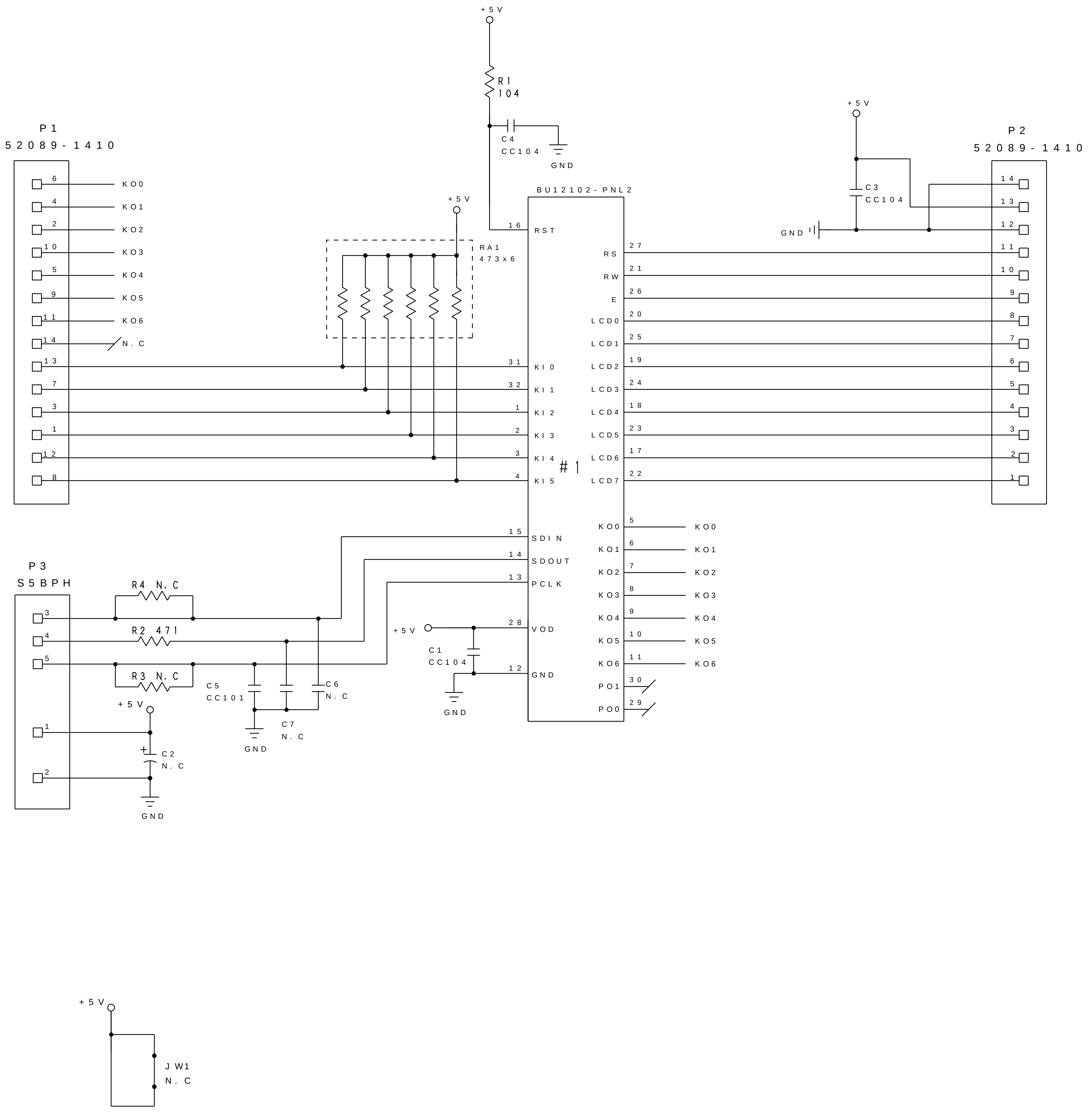
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.

2. 指示ナキコンテ゛ンサモノ耐圧ハ25V又ハ50Vトスル。

1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.

1. 指示ナキ抵抗ノ消費電力ハ1/4Wトスル。

B	NCU (NEW ZEALAND)


+5V
R1
104
C4
CC104
GND
P1
52089-1410
KO0
KO1
KO2
KO3
KO4
KO5
KO6
N.C
+5V
RA1
473x6
BU12102-PNL2
RST
KI0
KI1
KI2
KI3
KI4
KI5
#1
SDIN
SDOUT
PCLK
VDD
GND
RS
RW
E
LCD0
LCD1
LCD2
LCD3
LCD4
LCD5
LCD6
LCD7
KO0
KO1
KO2
KO3
KO4
KO5
KO6
PO1
PO0
+5V
C3
CC104
GND
P2
52089-1410
P3
S5BPH
R4 N.C
R2 471
R3 N.C
C5
CC101
C7
N.C
C6
N.C
GND
+5V
C1
CC104
GND
+5V
C2
N.C
GND
+5V
JW1
N.C

C

Control Panel 1/2
(FAX1170/1270/1010/1020/MFC1770)

T3 PANEL KEY MATRIX REFERENCE TABLE 1

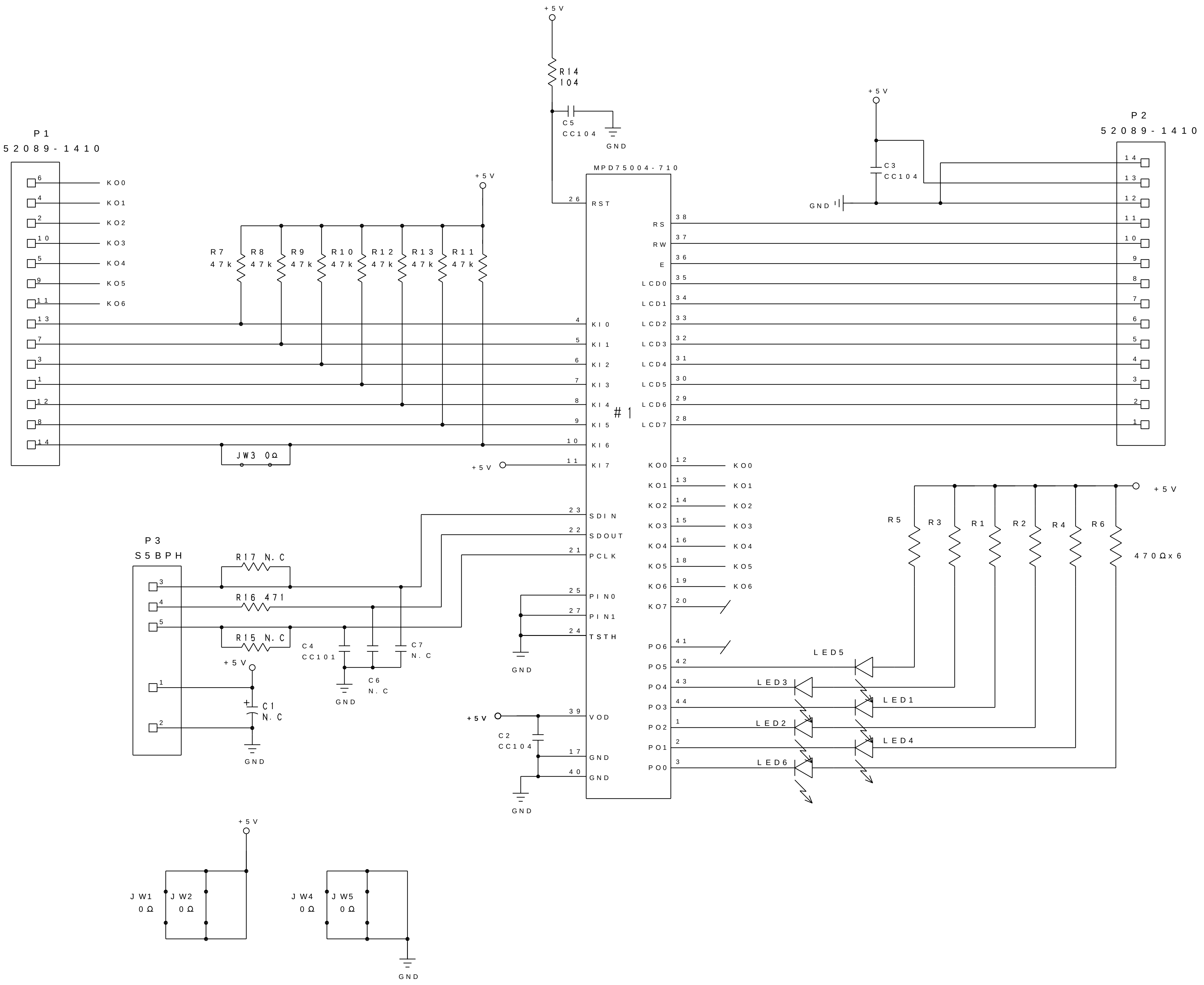
KEY NO.	KEY NAME MC(CL)	KEY COE
1	FUNCTION	0C
2	TEL-INDEX	14
3	RESOLUTION	0A
4	MODE	12
5	SUPER Q.SCAN	13
6	HELP	11
7	HOOK	24
8	10KEY-1	22
9	10KEY-2	0B
10	10KEY-3	23
11	HOLD	34
12	10KEY-4	32
13	10KEY-5	02
14	10KEY-6	33
15	REDIAL/PAUSE	04
16	10KEY-7	2A
17	10KEY-8	1A
18	10KEY-9	03
19	SPEED DIAL	1C
20	10KEY-※	2C
21	10KEY-0	2B
22	10KEY-#	1B
23	1TOUCH-1	0E
24	1TOUCH-2	26
25	1TOUCH-3	09
26	1TOUCH-4	21
27	1TOUCH-5	36
28	1TOUCH-6	06
29	1TOUCH-7	31
30	1TOUCH-8	01
31	SHIFT	16
32	←	1E
33	SET	2E
34	CLEAR	19
35	→	29
36	SORT	0D
37	ENLARGE/REDUCE	35
38	COPY	1D
39	STOP	2D
40	START	15

T3 PANEL KEY MATRIX REFERENCE TABLE 2

	KO0 P1-6P	KO1 P1-4P	KO2 P1-2P	KO3 P1-10P	KO4 P1-5P	KO5 P1-9P	KO6 P1-11P
KI0 P1-13P	30	25	6	34	26	35	29
KI1 P1-7P	13	3	4	17	8	16	12
KI2 P1-3P	18	9	5	22	10	21	14
KI3 P1-1P	15	1	2	19	7	20	11
KI4 P1-12P		36	40	38		39	37
KI5 P1-8P	28	23	31	32	24	33	27

C

Control Panel 2/2
(FAX1170/1270/1010/1020/MFC1770)


P1
52089-1410
KO0
KO1
KO2
KO3
KO4
KO5
KO6
R7 47k
R8 47k
R9 47k
R10 47k
R12 47k
R13 47k
R11 47k
+5V
JW3 0Ω
R14 104
C5 CC104
GND
MPD75004-710
#1
RST
KI0
KI1
KI2
KI3
KI4
KI5
KI6
KI7
SDIN
SDOUT
PCLK
PIN0
PIN1
TSTH
VDD
GND
RS
RW
E
LCD0
LCD1
LCD2
LCD3
LCD4
LCD5
LCD6
LCD7
KO7
PO6
PO5
PO4
PO3
PO2
PO1
PO0
C3 CC104
P2
52089-1410
R5
R3
R1
R2
R4
R6
470Ωx6
LED5
LED3
LED1
LED2
LED4
LED6
P3
S5BPH
R17 N.C
R16 471
R15 N.C
C4 CC101
C6 N.C
C7 N.C
C1 N.C
C2 CC104
JW1 0Ω
JW2 0Ω
JW4 0Ω
JW5 0Ω

C	**Control Panel 1/2 (FAX1570MC/1030/MFC1870MC/ 1970MC)**

T3-MC PANEL KEY MATRIX REFERENCE TABLE 1

KEY NO.	KEY NAME MC(CL)	KEY COE
1	MODE	0C
2	RESOLUTION	14
3	←	0A
4	SET	12
5	→	13
6	HOOK(子機)	11
7	10KEY-1	24
8	10KEY-2	22
9	10KEY-3	0B
10	HOLD(PAUSE)	23
11	10KEY-4	34
12	10KEY-5	32
13	10KEY-6	02
14	REDIAL/PAUSE(HOLD)	33
15	10KEY-7	04
16	10KEY-8	2A
17	10KEY-9	1A
18	SPEED DIAL(HOOK)	03
19	10KEY-*	1C
20	10KEY-0	2C
21	10KEY-#	2B
22	FUNCTION	1B
23	TEL-INDEX	0E
24	HELP	26
25	1TOUCH-1	09
26	1TOUCH-2	2C
27	1TOUCH-3	2E
28	1TOUCH-4	29
29	1TOUCH-5	16
30	STOP	2D
31	COPY	2A
32	START	15
SW1	MCMODE	31
SW2	PLAY	32
SW3	ERASE	33
SW4	RECORD	34

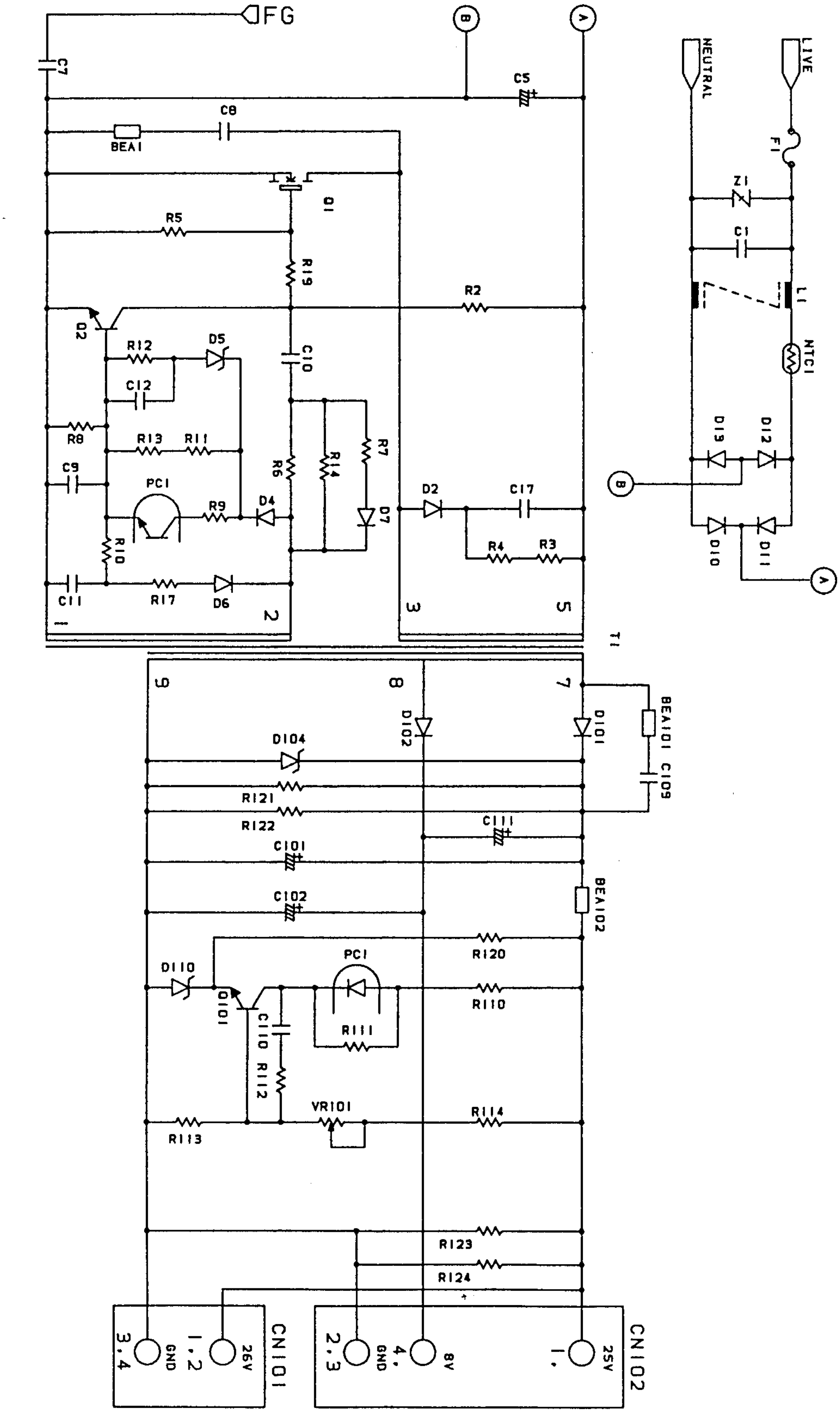
KEY NO.	KEY NAME MC(CL)	KEY COE
317	MODE	35
38	RESOLUTION	1D
39	←	2D
40	SET	15
41	→	17
42	HOOK(子機)	0F
43	10KEY-1	27
44	10KEY-2	37
45	10KEY-3	1F
46	HOLD(PAUSE)	2F
47	10KEY-4	25
48	10KEY-5	05
49	10KEY-6	07

T3-MC PANEL KEY MATRIX REFERENCE TABLE 2

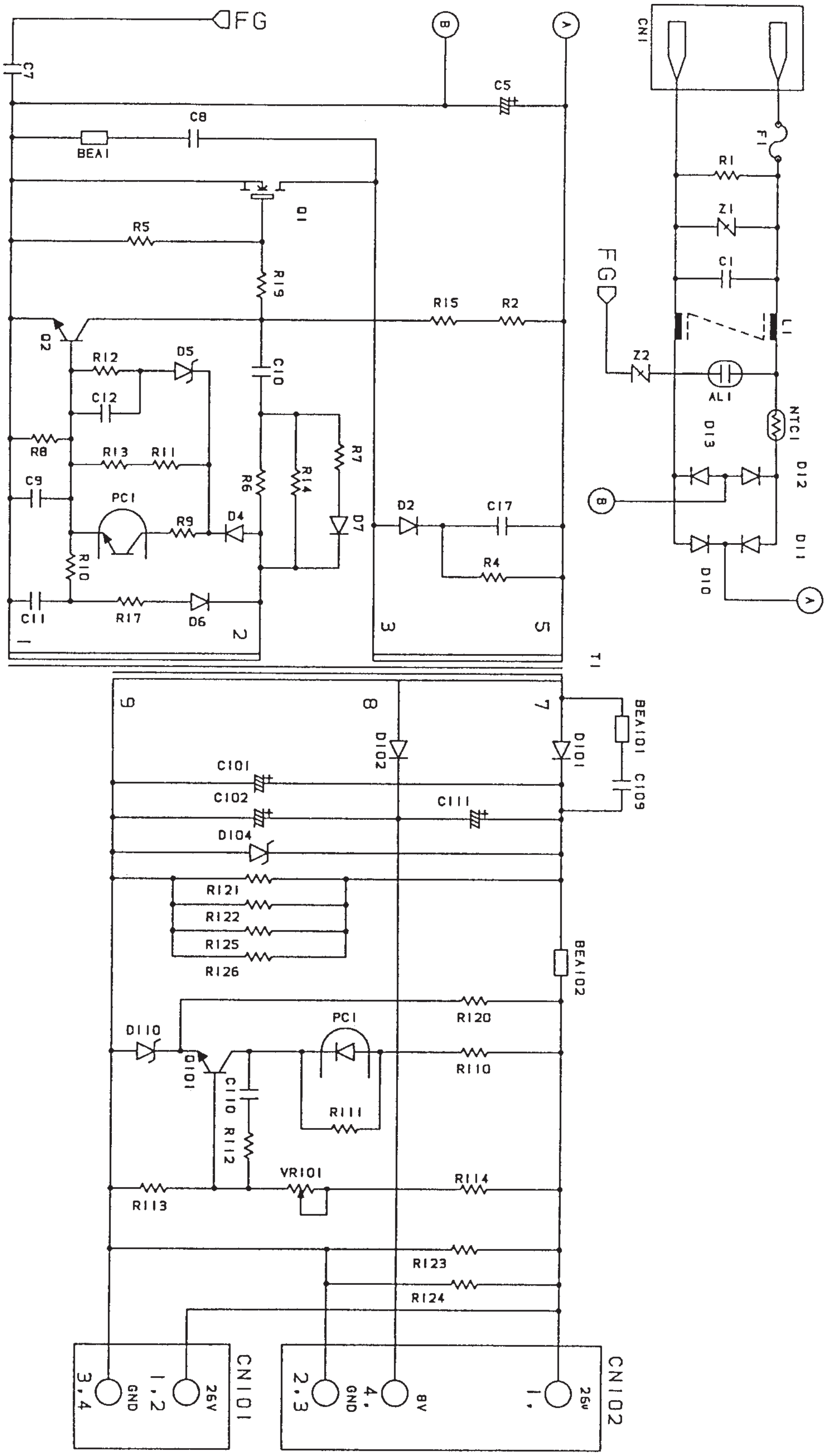
	KO0 P1-6P	KO1 P1-4P	KO2 P1-2P	KO3 P1-10P	KO4 P1-5P	KO5 P1-9P	KO6 P1-11P
KI 0 P1-13P	30	25	6	34	26	35	29
KI 1 P1-7P	13	3	4	17	8	16	12
KI 2 P1-3P	18	9	5	22	10	21	14
KI 3 P1-1P	15	1	2	19	7	20	11
KI 4 P1-12P	48	36	40	38	47	39	37
KI 5 P1-8P	28	23	31	32	24	33	27
KI 6 P1-14P	49	42	41	45	43	46	44

C

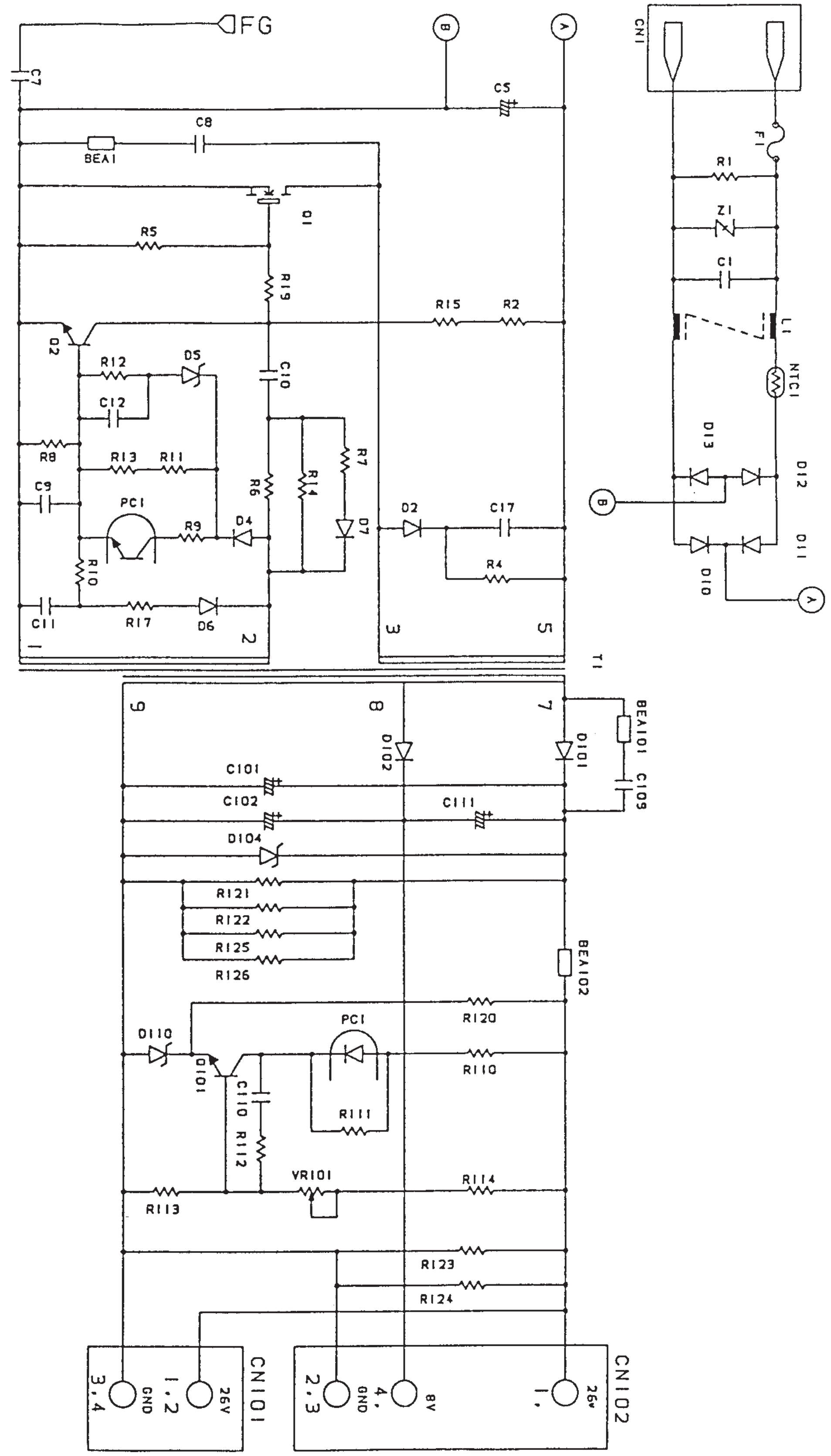
Control Panel 2/2
(FAX1570MC/1030/MFC1870MC/
1970MC)


FG
C7
B
A
C5
C8
BEA1
Q1
R5
R19
R2
Q2
R12
D5
C10
C12
R8
R13
R11
R7
R6
R14
C9
PC1
R9
D4
D7
D2
C17
R10
R4
R3
C11
R17
D6
1
2
3
5
T1
NEUTRAL
LIVE
F1
Z1
C1
L1
NTC1
D13
D12
D10
D11
9
8
7
D102
D101
BEA101
C109
D104
R121
R122
C111
C101
C102
BEA102
R120
D110
Q101
PC1
R110
C110
R111
R112
VR101
R114
R113
R123
R124
CN101
3,4
GND
1,2
26V
CN102
2,3
GND
4,
8V
1,
25V

D	**Power Supply (100-120V)** **U.S.A., CANADA, TAIWAN**


FG
C7
B
A
C5
C8
BEA1
Q1
R5
R19
Q2
R15
R2
R12
D5
C10
C12
R8
R13
R11
R7
R6
R14
C9
PC1
R9
D4
D7
D2
C17
R10
R4
C11
R17
D6
1
2
3
5
T1
CN1
F1
R1
Z1
C1
L1
FG
Z2
AL1
NTC1
D13
D12
D11
D10
9
8
7
BEA101
D102
D101
C101
C109
C102
C111
D104
R121
R122
R125
R126
BEA102
R120
D110
PC1
D101
R110
C110
R112
R111
VR101
R114
R113
R123
R124
CN101
3,4
GND
1,2
26V
CN102
2,3
GND
4,
8V
1,
26v

D	**Power Supply (200-240V)** **EUROPE, SOUTH AMERICA**


FG
C7
B
A
C5
CN1
F1
C8
BEA1
Q1
R5
R1
Z1
C1
R19
R15
R2
L1
Q2
R12
D5
NTC1
C10
C12
R8
R7
D13
R13
R11
D12
R6
R14
C9
PC1
R9
D4
D7
D2
C17
R10
R4
D11
D10
C11
R17
D6
1
2
3
5
T1
9
8
7
BEA101
D102
D101
C101
C109
C102
C111
D104
R121
R122
R125
R126
BEA102
R120
PC1
D110
Q101
R110
C110
R112
R111
VR101
R114
R113
R123
R124
CN101
3,4
GND
1,2
26V
CN102
2,3
GND
4,
8V
1,
26v

D	**Power Supply (200-240V)** **GULF, ASIA, CHINA**